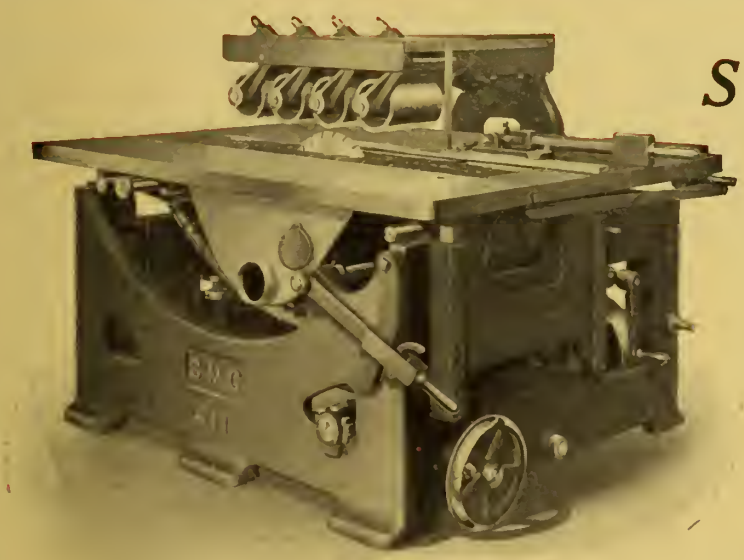
Volume-Twenty-Three TORONTO JANUARY, 1923 Number One

CANADIAN WOODWORKER and Furniture Manufacturer



STRAIGHT EDGER

C.M.C.

THE BETTER LINE

Can You Beat It?

One firm installed two of our No. 611 straight edgers. **Two boys** and **two girls** now do the work formerly requiring **six men** and **six boys.**

In another plant a 611 has been operating continuously for seven years, with **no repair bill.** The caps have never been off the arbor bearings.

Another 611 now does the work in **five hours** formerly done by another straight edger in **fifteen hours.**

CANADA MACHINERY CORPORATION, GALT, ONTARIO
LIMITED
Manufacturers of wood and iron working machinery
Toronto Sales Office 721 Bank of Hamilton Building

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MANUFACTURERS OF

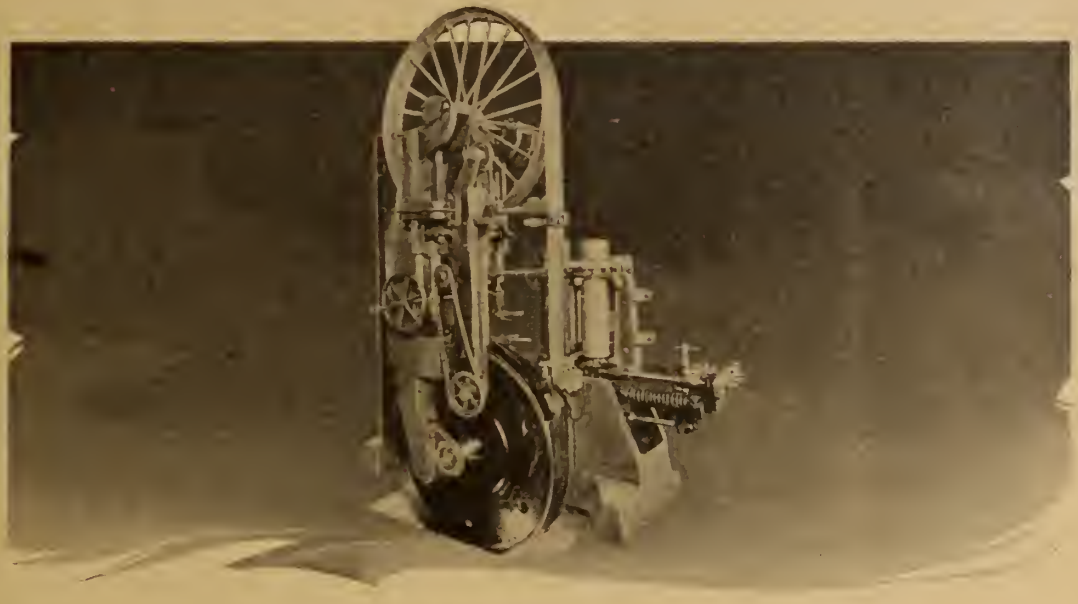
MAPLE LEAF BRAND

Ethyl Alcohol—Cologne Spirits—Absolute Alcohol, B.P.
Methylated Spirits and Denatured Alcohol (all formulae)

Distributing Warehouses:—

MONTREAL TORONTO WINNIPEG VANCOUVER

SKF



No Play in Band Resaw Wheels

When Ball Bearing Equipped

THE performance of a band resaw depends largely on the wheel bearings. Operating in an atmosphere filled with saw dust, subjected to severe loads and strains and running at high speeds, plain bearings soon bind, run hot and show excessive wear. This necessitates frequent rebushing with a consequent loss of productive time. Both the quantity and quality of the work suffer; and a fire hazard is created by leaking oil.

These troubles are eliminated when **SKF** marked self-aligning ball bearings are used. They are free running even under conditions of misalignment; and after months of operation the wear is so negligible that only microscopic means can detect it. The saw band retains its original setting and a more uniform quality of work is obtained.

Secure these advantages and at the same time increase production, or decrease power consumption, by using ball bearing equipment.

CANADIAN **SKF** COMPANY, LIMITED

TORONTO · MONTREAL

Normal View *Deflected View*

Don't let your competitors beat you on Drying Costs

Your copy of "Better Drying in Half the Time" is ready to mail as soon as you say the word. It contains the opinion of a dozen practical lumbermen and they are opinions which you can bank on, for each is based on the actual use of Cutler Kilns.

HUNDREDS of lumber manufacturers have already received the new Cutler book on "Better Drying in Half the Time." Many of them are now planning to install Cutler cost-cutting, time saving, quality-assuring Kilns.

Don't wait until you begin to lose business because of your excessive drying costs. Investigate Cutler Kilns now and be prepared to equal the lowest figure your competitor can make, with a profit left for you.

The Cutler method of drying gives a three-fold saving—fewer kilns for a given footage per year, perfect drying in half the time required by other methods, and finally practically no loss from degrade, due to the patented Cutler method of obtaining and retaining correct conditions at all times.

Write for "Better Drying in Half the Time" today.

All essential features of Cutler Kilns are fully protected by mechanical and process patents granted and pending.

Dry-Kiln Department.
CUTLER DESK COMPANY
Dept. F. Buffalo, N.Y.

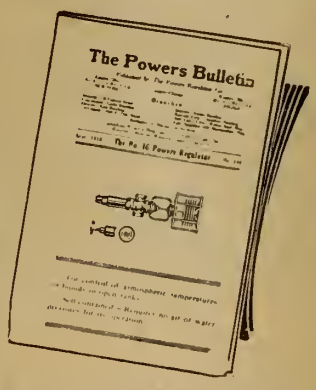
Cutler KILNS

Better Drying in Half the Time

Prices—Cost—Wages—those are the words heard most frequently when business men get together.

Under present conditions, manufacturers must take advantage of every possible device and method that will save labor, or cut down other costs in any way.

That's why so many are asking us about our methods of heat control—**methods that save labor, coal, material and time.**



Our Bulletins give concise, accurate information about Powers Regulators. Tell us what place or process needs heat control, and we'll send you the Bulletins that give pertinent facts, typical cases, etc. Free for the asking.

Wherever heat is used—even to warm the rooms — there is a certainty that a real saving can be effected by applying a Powers Regulator at the right point.

Powers Regulation is not a cure-all—not a generality—but it provides specific treatment for specific conditions.

It will save money for you in the kiln, the drying room, the glue kettle, the hot water tank—and any other place where an even temperature is a factor.

Heat Regulation has been our sole business for over thirty years. In that time we have solved many problems and gained a rich fund of experience.

We are always glad to counsel with anyone who wants to know what Automatic Heat Control will do for his business.

Please feel free to ask questions

The Canadian POWERS REGULATOR Co. Ltd.
Specialists in Automatic Heat Control
106 Lombard Street — Toronto, Ont.

Calgary, Alta. Halifax, N.S. Montreal, Que.
Vancouver, B.C. Winnipeg, Man.

(1681E)

YATES

G2 Ball Bearing Self Feed Rip Saw Will Do The Work Of Three Ordinary Hand Feed Machines.

They
Save Lumber—Save Time—Save Labor—Save Power
Do More Work—Do Better Work

A few of the many testimonials we have received from users of G2's.

"We estimate that your Saw eliminates at least 50 per cent of the loss in material as compared to that of the old style self feed rip saw."

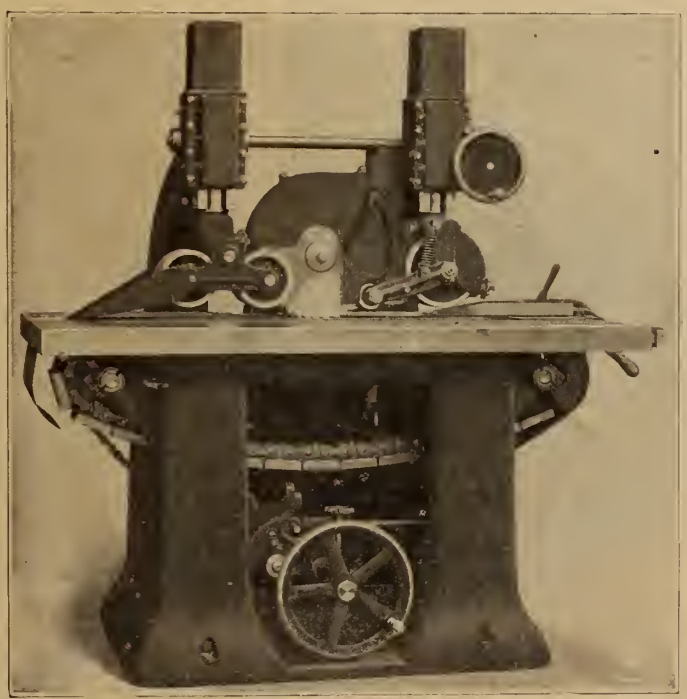
"We have two of these saws doing the work that ten men were doing on table saws."

"We are making the joints of all our solid tops, both quartered and plain with your machine. We glue them up just as they leave the machine, and are having perfect success."

Write us—you will be shown the value and advantage a Straight Edging and Jointing Saw would be in your plant.

P. B. Yates Machine Co. Ltd.

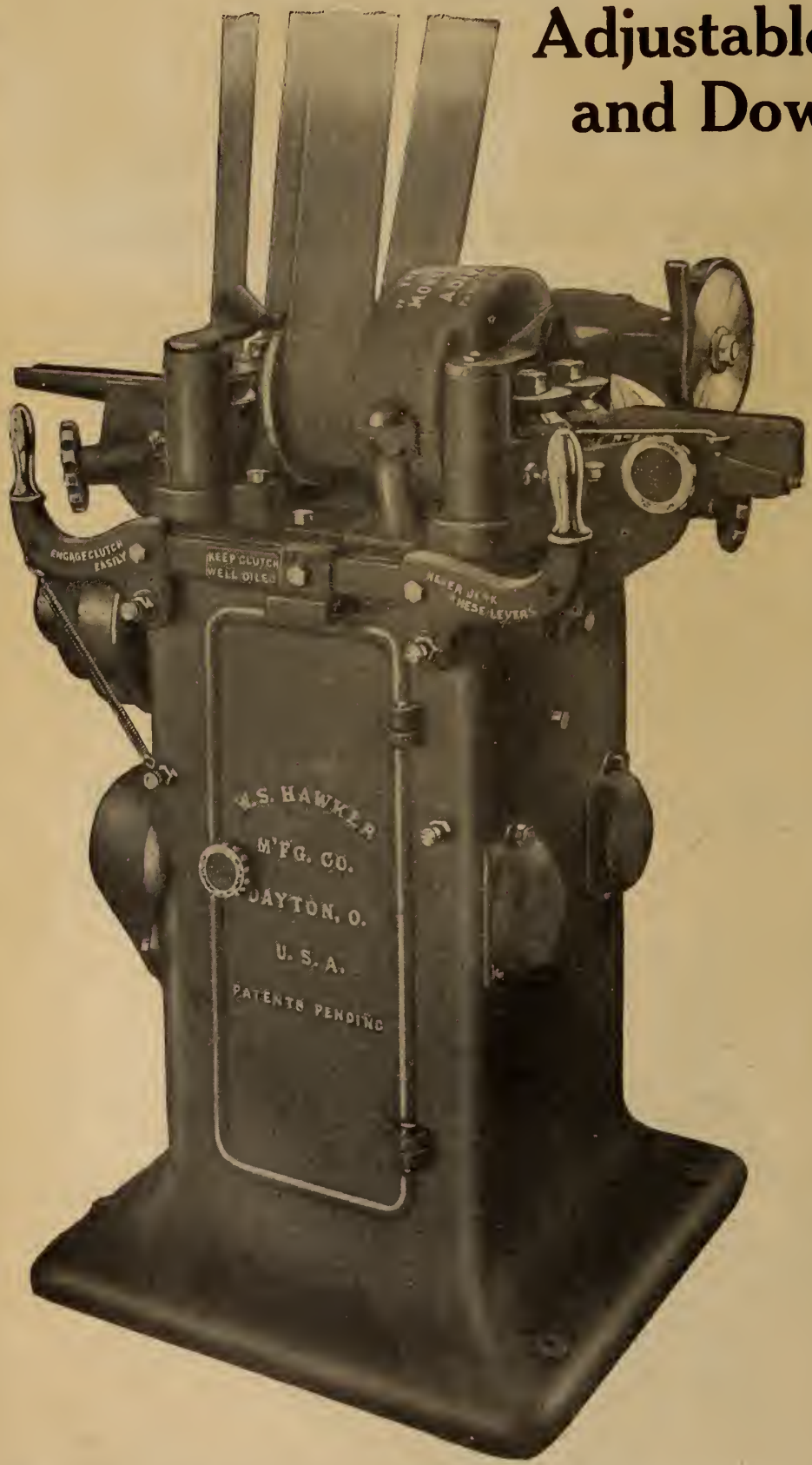
HAMILTON - - ONTARIO



The Invariable Choice Yates Of the Man who knows

The Invariable Choice Yates Of the Man who knows

The Money Maker— Adjustable Rod and Dowel Machine

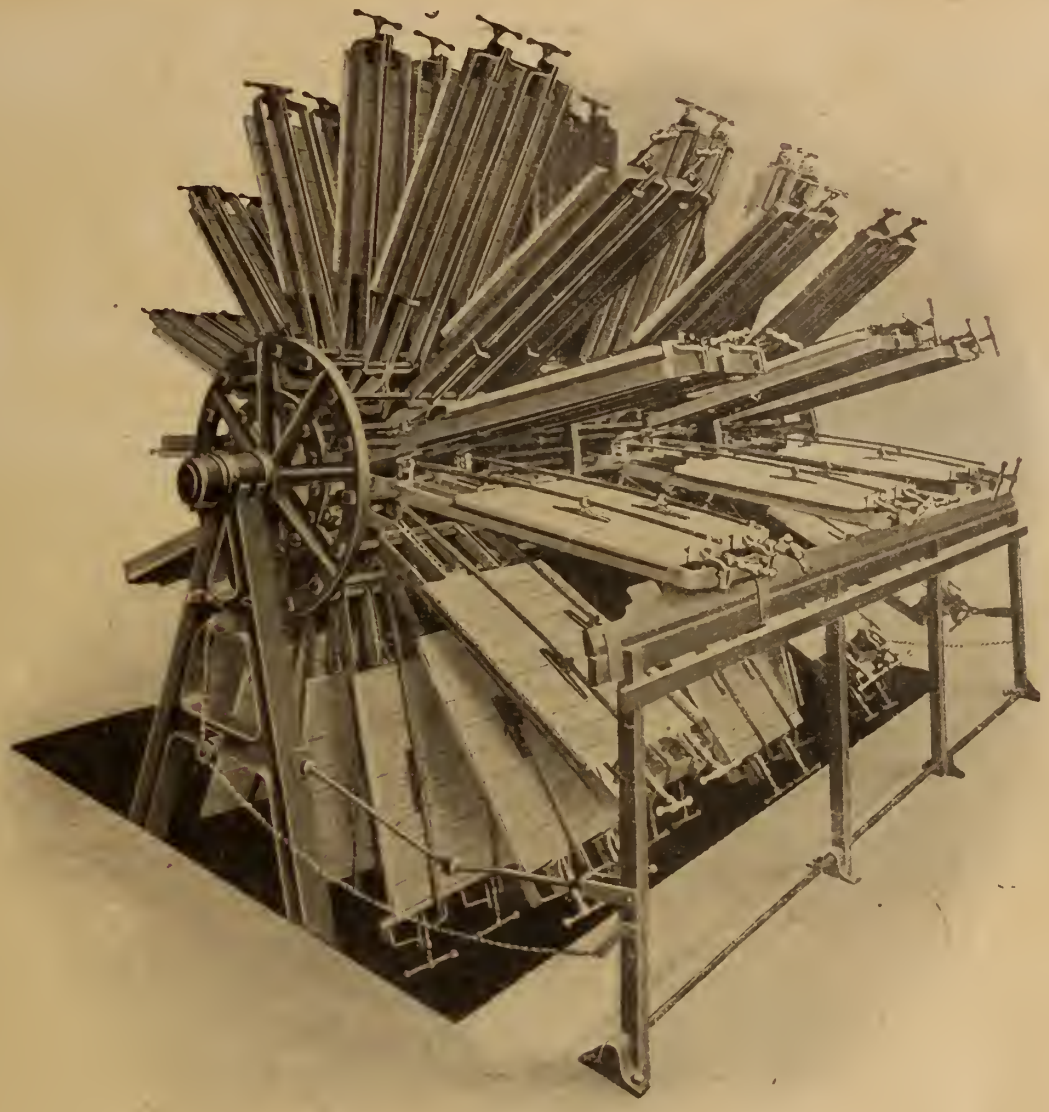


Capacity 30,000 to 40,000 lineal ft. per ten hours on 7/8 or 15/16 mop or sweeper handle stock.
If you are using any dowel machine of less capacity, figure your daily losses in labor and business.
Write us what dowel sizes you turn, and whether hard or soft wood. Ask for our demonstration proposition to show you how to double your production of dowel stock at the same labor cost.

The machine that is sent under a guarantee to show you a gain of from 100 to 400 per cent before you buy it.
The improved dowel machine that 90 per cent of the largest and oldest machinery builders and dealers now endorse and recommend in preference to the solid chuck machines they themselves previously built.
One cutter head turns from ¼-in. to 2-in. diameter.
Turns hard or soft wood equally well.
Handles heavy, oversized squares.
No choking of the cutter head.
Smooth stock.
Accurate sizes.
Works stock as short as five inches.
Rolls automatically center variations in squares.
Machines built to turn from ⅛ to 6-in.
We want to hear from every user of a solid chuck dowel machine.
We can save you from one dollar out of every two, to four out of every five that the operation of solid chuck machines costs you.
Engagements for competitive test solicited.
Formal orders not solicited. All sales made after demonstration.

The only question is, are you willing to cut cost of your dowel turning to one-half or one-third of what it costs with any make of solid chuck machine?
Machine delivers the goods before you buy.
State conditions of stock closely
Special conditions require special equipment.

W. S. Hawker Mfg. Company, Dayton, Ohio



For Cores and Solid Work

This machine is scientifically designed and constructed to insure the greatest efficiency together with simplicity of operation.

It insures the rapid making of good glue joints and holds the stock off the floor until the glue has set.

With this clamp one man can produce more and better work than two can produce under old methods.

It will prove a wonderful investment for any plant where a quantity of edge gluing is done.

It is made in sizes to suit customers requirements.

Each clamp is equipped with side brackets for short stock and a spring steel binder for thin stock.

Unequalled for clamping chair seats, furniture, dimension stock, school desks, panels, tops, etc.

Descriptive circulars and information gladly furnished on request.

Jackson, Cochrane & Company

Manufacturers of Woodworking Machinery. : KITCHENER, ONTARIO

Cut Off Two Ends at One Time——

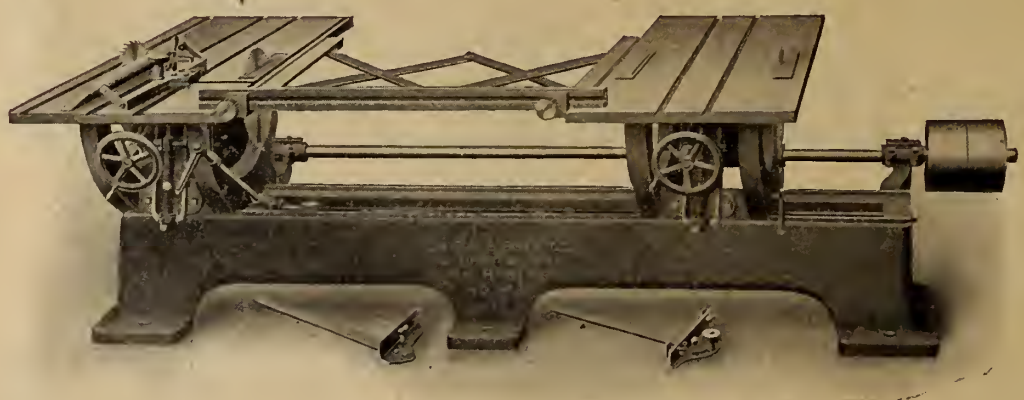
——Accurately

FURNITURE factories are finding the **No. 398 "Lightning" Double Cut-Off Saw** a great factor for increasing their production in cutting of stock to exact lengths.

Cross-cutting fence automatically adapts itself to varying lengths.

Cuts off in lengths from 7 in. up to 8 ft. 4 in.

Provision is made on one side of the No. 398 for ripping up to 12 in. wide.



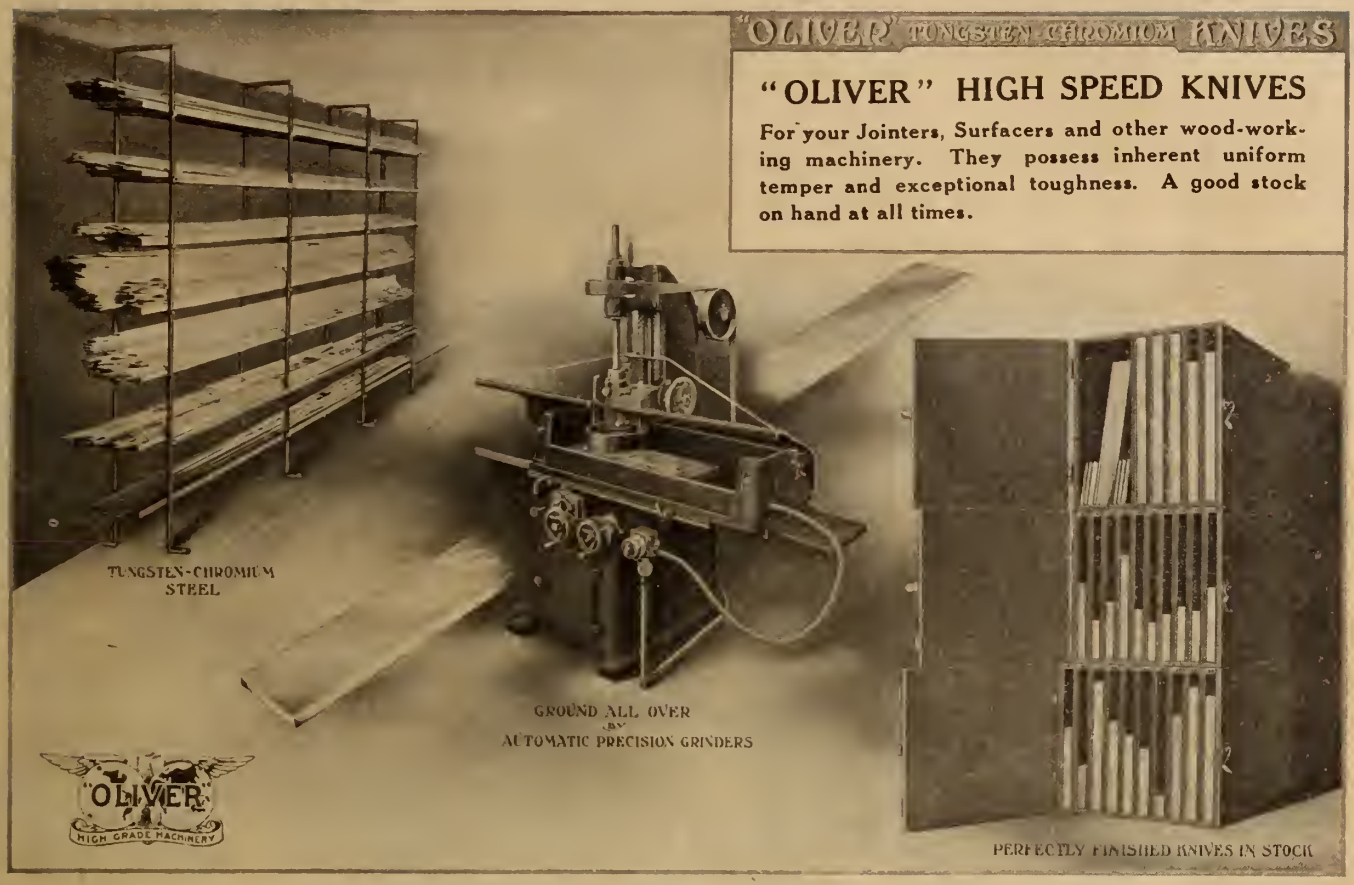
J. A. Fay & Egan Company

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

153-173 W. Front St. - - Cincinnati, Ohio, U. S. A.

Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.
Branches: Montreal, St. John, N. B., Winnipeg, Vancouver



"OLIVER" TUNGSTEN CHROMIUM KNIVES

COST NO MORE

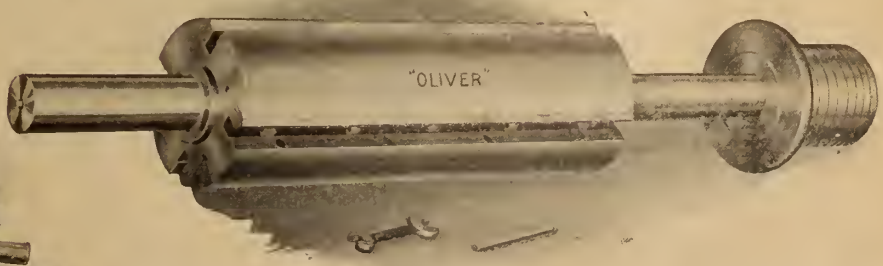
Yet Save on These Points

1. Do more work after one grinding.
2. Save you time of frequent grinding.
3. Knives last longer.
4. Knives are better quality.
5. Large Stock, quick shipment.

"OLIVER"
SAFETY CUTTER HEADS

for Shapers, Woodworkers, etc., made either with two, three, four or six knives, any diameter, any length, any size hole.

They grip the knives just back of the cutting edge, actually doing superior work.



"Oliver" Circular Safety Cylinders are built variously with two, three, four or six knives for Hand Planers and Jointers, Surface planers, etc.

SEND YOUR KNIVES

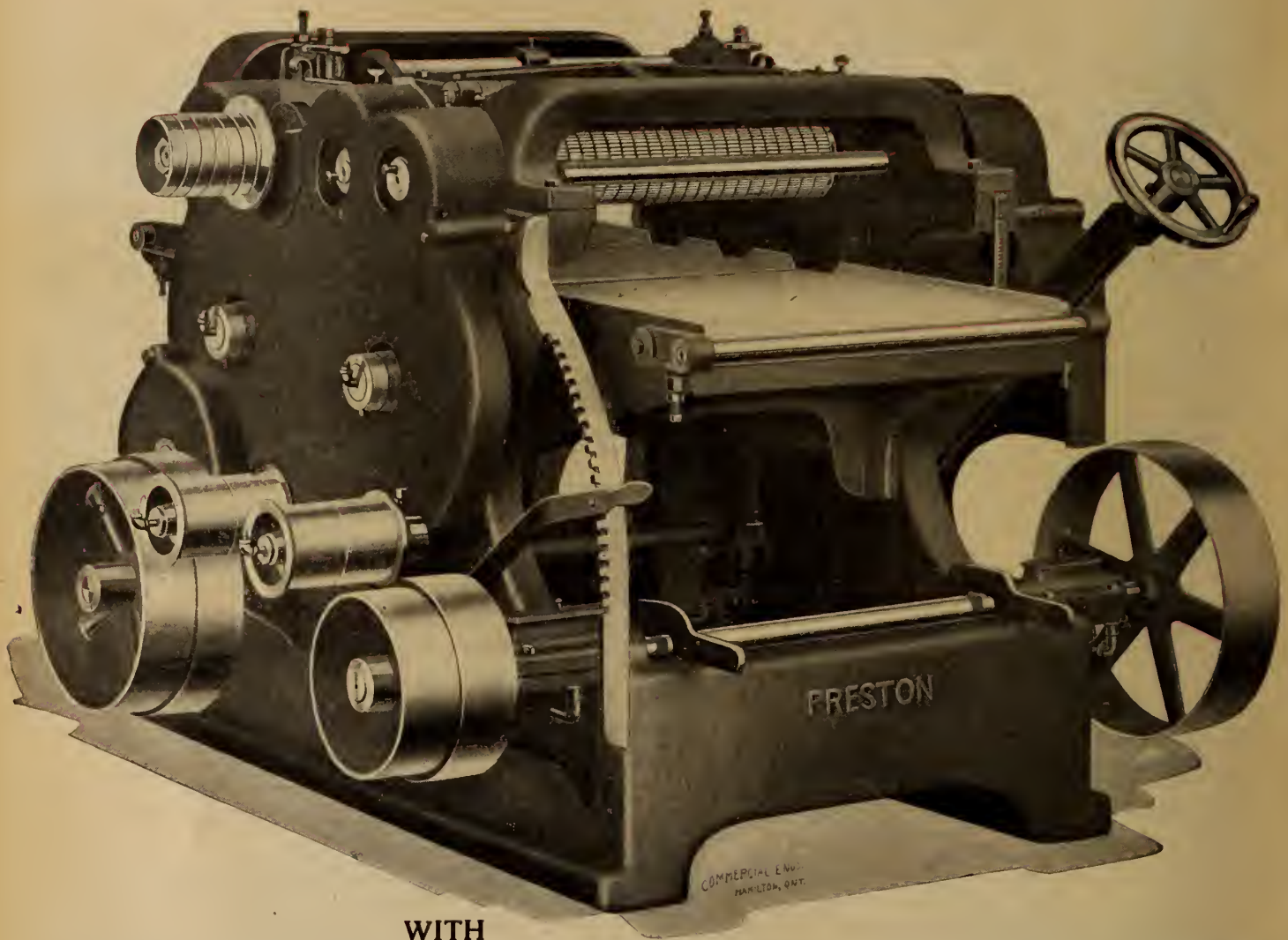
to us for sharpening, or, better still, ask about the "Oliver" Knife Grinders.

"Oliver" Thick Planer Knives, Shaper Knives, Moulding Cutters.

Oliver Machinery Co., Grand Rapids, Mich., U. S. A.

C. A. LaVenture 56 West King St., Toronto Representative

No. 123 "Preston" High Speed Ball Bearing Surface Planer



WITH

(1) Specially selected S.K.F. Ball Bearings (2) Sectional Roll and Sectional Chipbreaker (3) Round Cylinder with 4 High Speed Knives (4) Stockbridge Knife Grinder and Jointer (5) Cylinder Speed, 6000 r.p.m.

Could you come to Preston and let us show you a machine in action.
We will prove that it will:—Firstly, eliminate 75% of the ordinarily necessary sanding. Secondly, increase your production one hundred fold. If it will do that, you should have it.

We take this opportunity to wish our customers "A Merry Christmas and a Prosperous New Year."

The Preston Woodworking

PRESTON,

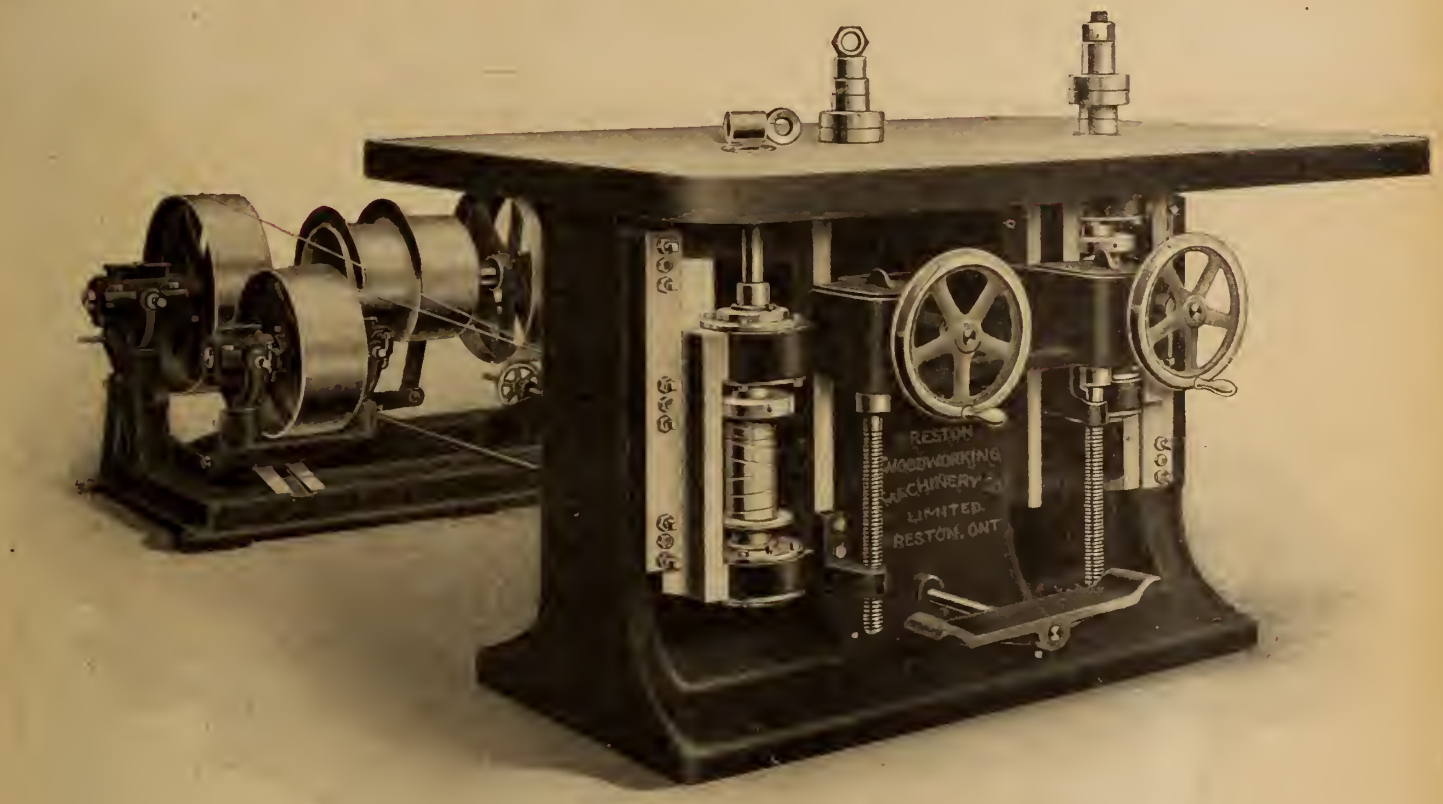
We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

? ? WHY NOT ? ?

Save $5.00 Every Day

By Installing a

Preston Heavy High Speed Ball Bearing Shaper



Built with either one or two spindles

IT WILL

1. **DOUBLE** your shaper production.
2. Vastly increase the quality of your work.
3. Pay for itself in 6 months.
4. Be much easier on your operator.

MORE PRODUCTION is the big cry in the world today
and **LABOR SAVING MACHINERY** is the only answer.

Machinery Company, Ltd.

ONTARIO

Specialists in Ball Bearing Woodworking Machinery

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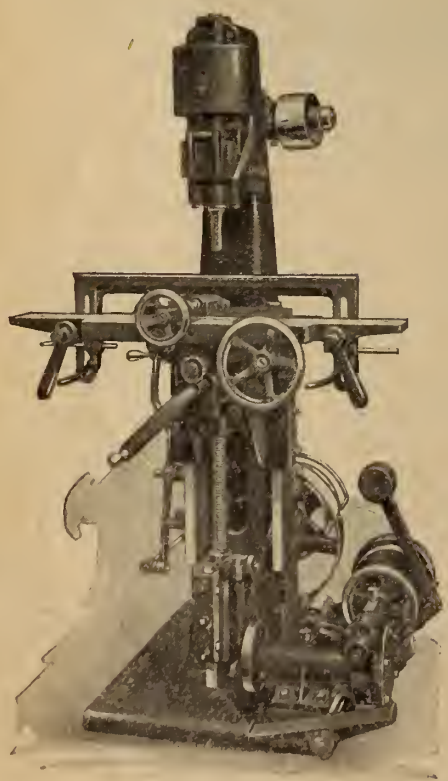


Vertical Hollow Chisel Mortiser 288

Automatic Power Feed

18 and 25 strokes per minute.

Compound Table

Lowers 16″ from point of chisel.

Horizontal Travel 10″.

Mortises up to ¾″ square, 3″ deep.

The most satisfactory machine of this type made.

Cowan & Co. of Galt Limited

Galt - Ontario

3 More Leaders Endorse *The* GRAND RAPIDS VAPOR KILN

We reproduce herewith photographs of the Grand Rapids Vapor Kiln installation at the Crocker Chair Company at Sheboygan, Wis.; Curtis, Yale & Holland, Minneapolis, Minn., and Welch Manufacturing Co., Grand Rapids, Michigan.

These three enterprises alone employ 22 Grand Rapids Vapor Kilns to supply their requirements for ideally cured stock. They have placed several repeat orders since installing their first Grand Rapids Vapor Kilns and have replaced old-fashioned equipment with Grand Rapids Vapor Kilns on the strength of their experience with this scientific method of curing wood better in less time.

In countless wood working plants throughout the United States, making all kinds of wooden products, the Grand Rapids Vapor Kiln is safeguarding dry kiln production, cutting costs, increasing speed and maintaining quality.

We maintain as the very foundation of our continued leadership America's most highly specialized and efficient laboratory service serving the woodworking industry. Technical bulletins covering practically every phase of wood curing problems are yours FREE upon request and the personal service of our corps of experts here and abroad is offered without placing you under the slightest obligation. Write us.

GRAND RAPIDS VAPOR KILN

Engineers, Manufacturers, Contractors

Main Office and Factory—GRAND RAPIDS, Mich, U.S.A.

Represented on the Pacific Coast by
E. F. Tindolph, 1608 Hoge Bldg., Seattle, Washington

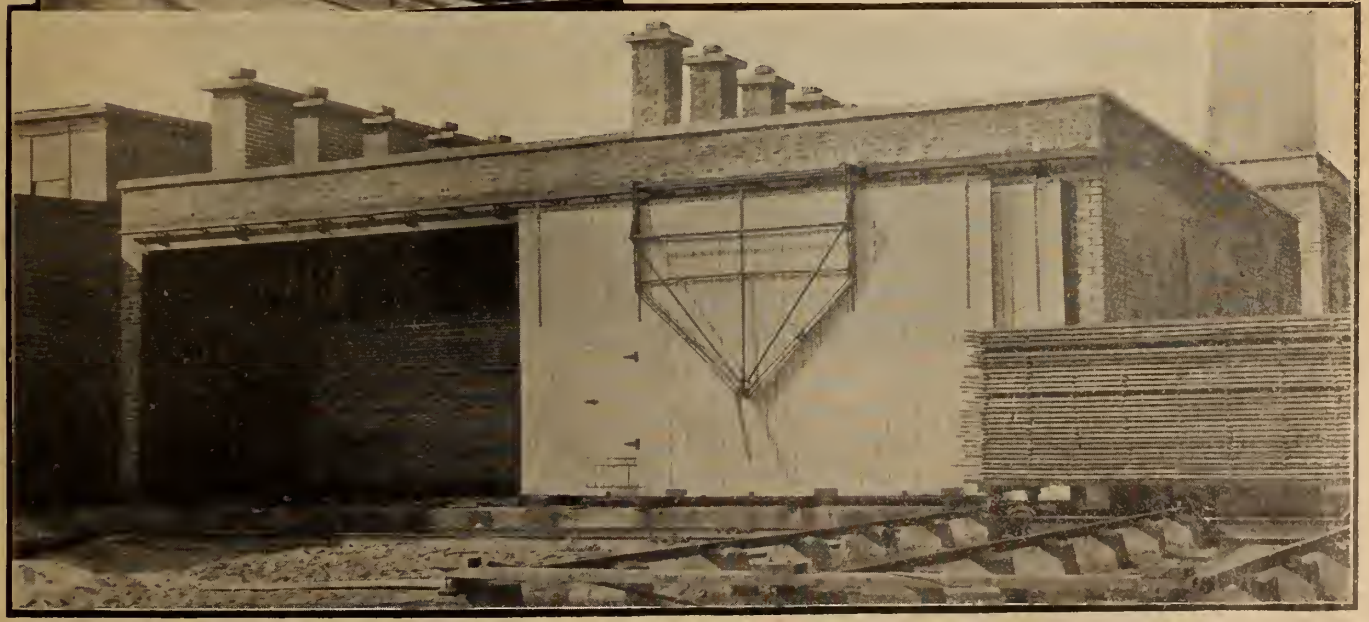
FOREIGN OFFICES:

BOORMAN & BOORMAN
Sidney, Australia

THE OLIVER MACHINERY CO.
Manchester, England

A. R. WILLIAMS MACHINERY COMPANY
St. John, N.B.

HAMPE & HARTWIG
Hamburg, Germany



The Canadian Appraisal Co. Limited

The Pioneer Appraisal Organization of Canada

Established 1905

"An adjustment of fire insurance in accordance with existing values is a universal necessity. Many people who now believe that they are properly covered against the fire risk are, in reality, inadequately covered. Morever, realization of these facts is by no means general."

The Chronicle

Over 85% of the appraisals made during the past fifteen years of Canadian manufacturing and industrial properties have been carried out by us, aggregating some 5.000. properties, and include over 250 lumber and woodworking plants.

Correspondence invited

TORONTO
Royal Bank Building

MONTREAL
364 University Street

Dominion Appraisal Company Limited

The Test of An Appraisal

"We have never been so grateful for anything we have done as for the appraisal made by you in December 1919. It certainly was worth thousands of dollars to us in the adjustment of the fire."

Port Arthur Daily News Limited
May 5th, 1921

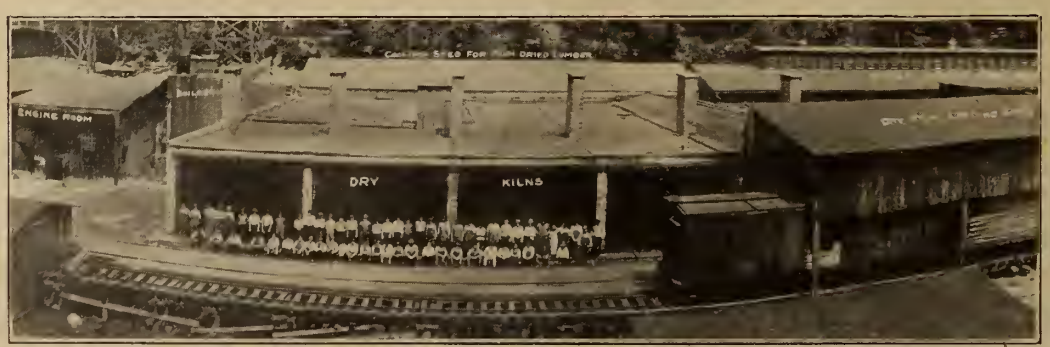
Our staff of qualified appraisers—men with many years experience in the appraisal field—and our system of careful supervision of all work entrusted to our care has afforded protection to our large clientel extending throughout the Dominion of Canada.

We solicit your correspondence

8-10 Wellington Street East
TORONTO, ONT.
Telephone Main 646.

Take flooring for example:-

More Standard Dry Kilns were ordered in 1922 **than any two other** 'makes' for big, new oak flooring plants,——and that isn't all——!



One of the many plants of W. M. Ritter Lbr. Co., Columbus, O.—all their kilns are The Standard

The Standard Dry Kiln Co.

Plan ahead for '23 with our literature. Address us at 1542 McCarty St., Indianapolis, Ind.

PERKINS
1 8 3
Trade Mark
Reg. U.S. Pat. Off

General Office and Factory

SMOOTH SAILING

WITHOUT INTERRUPTION

the business craft moves smoothly forward when equipped with modern machinery, skilled personnel and high grade raw materials.

By supplying "PERKINS 183" of proved quality promptly we contribute to "SMOOTH SAILING" through your manufacturing problem.

Patents covering Perkins Glue have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy, and other foreign countries.

PERKINS GLUE COMPANY

Factory and General Offices:
Lansdale, Pennsylvania

Sales Office.
South Bend, Indiana.

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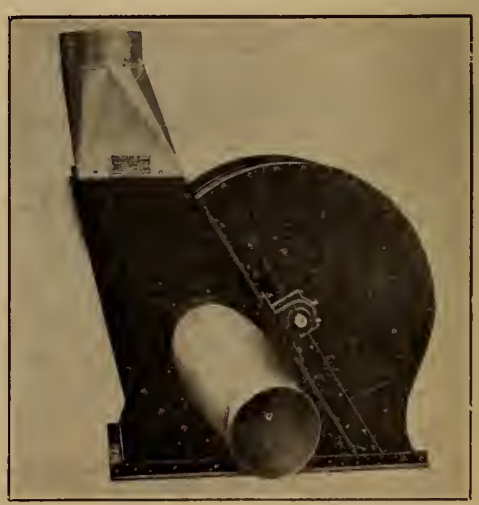
Have your Blower System scientifically planned by experts

IF you are considering the installation of a Blower System, remember that the only satisfactory method—and the method that will ultimately be the most economical—is to have the installation planned by experts who will adapt the system to your particular plant.

When a contract is given to us, our experts supervise the entire job. Yet our responsibility does not end when the fans are set in operation. We see to it that the system is kept at the peak of efficiency throughout its entire life.

Let us give you quotations on a blower system that minimizes the risk of fire by freeing your plant of inflammable materials and feeding same under boilers with our automatic furnace feeders.



Patented
Side view of 30 inch blower showing inlet and upright discharge duct.

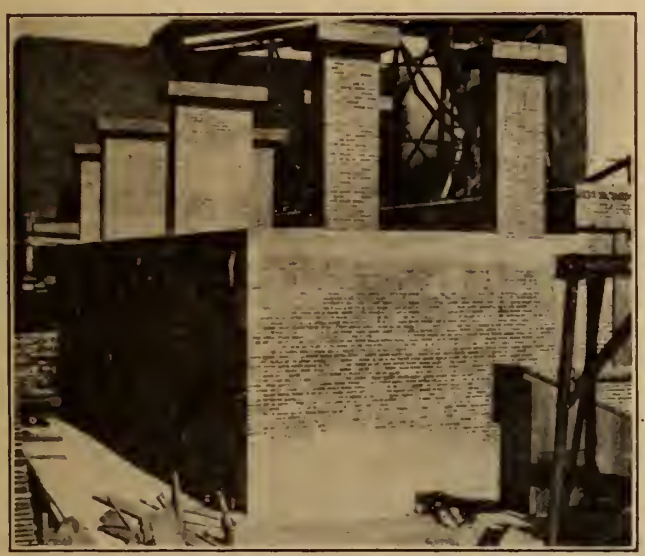
TORONTO BLOWER CO.

156 Duke St. - - TORONTO

"WELL DONE"

What better Season's Greetings could we have received?
Read Mr. Watt's letter below, regarding his new

NATIONAL Automatic Humidity Controlled DRY KILNS



Kilns of Watt Milling & Feed Co., Ltd.

Toronto, Ontario
Dec. 26, 1922.

The National Dry Kiln Co.,
Indianapolis, Indiana.
Mr. C. A. Fields, Canadian Representative

Dear Sirs:

This being the Christmas and New Year's season, we thought, instead of sending Christmas and New Years cards to you, we would send you in place of it our testimony as to your National Kilns, of the compartment type, which we installed during last August and September.

We beg to say that they have filled every expectation we had of them. We knew they would do this because of the great number of letters we received and are glad to report that we feel they are one of the finest kilns for general use made in the world, being very fast in operation on any kind of lumber and turning it out in almost perfect shape. The automatic control we consider is one of the finest pieces of mechanism for the purpose we have ever seen or heard of. We can cheerfully recommend your equipment to any looking for kiln drying apparatus.

Wishing you a Happy New Year in which we trust you will have great prosperity in your business, we are

Yours truly,

The Watt Milling & Feed Co. Ltd.,
Per John Watt.

If interested in dry kilns, write for a copy of our 1923 catalog—just off the press.
Let us help you with your drying problems—our service is free.

THE NATIONAL DRY KILN COMPANY

1117 East Maryland Street, Indianapolis, Indiana

Canadian Representative: C. A. FIELDS, P.O. Box 55, TORONTO

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CERTIFIED JOINT GLUE

"WHAT WE GLUE WE HOLD"
MADE IN CANADA
BY
CANADA GLUE COMPANY
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BRANTFORD, ONT.

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When used in describing a **Cannon Glue** is more than a claim. It is an established **fact!**

We have customers in Canada who have used one brand for fifteen to twenty years without one cause for complaint.

CANNON CANADIAN CO., LTD.
TORONTO MONTREAL

KANE VEGETABLE GLUE

Our Comebacks are Duplicate Orders

Manufactured by,

KANE MANUFACTURING CO.
1832-34 South Clark Street CHICAGO, ILL.

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Made by Rockwell Mfg. Company

Monite Waterproof Glue
endures changing extremes of moisture, heat and cold—for interior or exterior work.
Monite Sticks to Its Job

This Plywood Door for Exterior Use

Extract from a recent letter:

Milwaukee, Wis. December 19, 1921

"It is a source of satisfaction to recommend Monite Glue as entirely satisfactory for all woodwork purposes. During three years of constant use of Monite Glue no complaint of our products has been received. In addition, it saves time and labor because of the simplicity of its preparation. It covers 15-sq. ft. more of surface per pound than any other glue we have used. It has always proven dependable."

—The Rockwell Manufacturing Co.

Until Monite Waterproof Glue became available, all attempts to use plywood for outside doors, failed. They would not stand up under exposure to sun, rain, frost and snow.

The Rockwell Manufacturing Co.'s plywood doors made from selected wood of the highest quality, and glued with MONITE, are as beautiful as they are durable. They are sold, not only in every state in the Union, but throughout the world—and no condition of outdoor climate has yet been found too severe for them.

For, Monite Waterproof Glue endures all extremes of dry and wet, heat and cold. It gives the manufacturer new sales possibilities for his products—and insures satisfaction. New products in almost every woodworking line are made possible by Monite Waterproof Glue.

Get our vest-pocket sample panel of Monite-made plywood. Boil, bake, soak or steam it—MONITE STICKS TO THE JOB.

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Cable Address: Monite—Minneapolis

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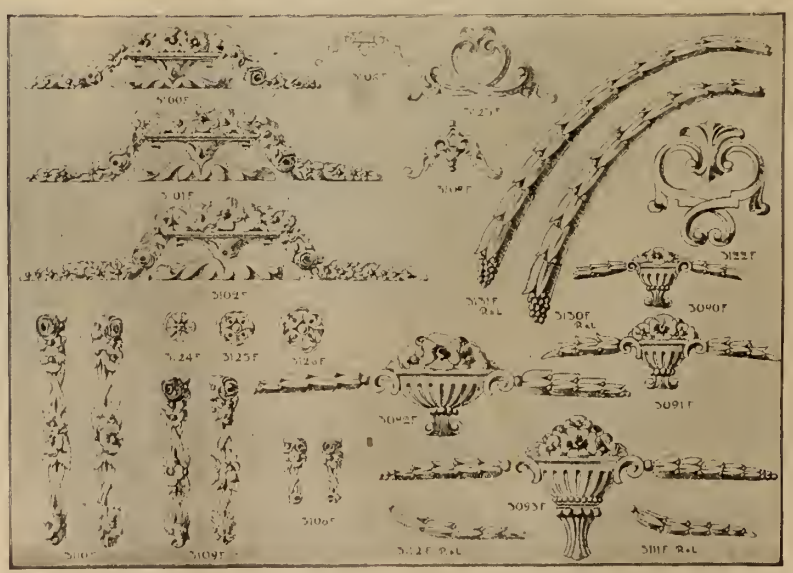

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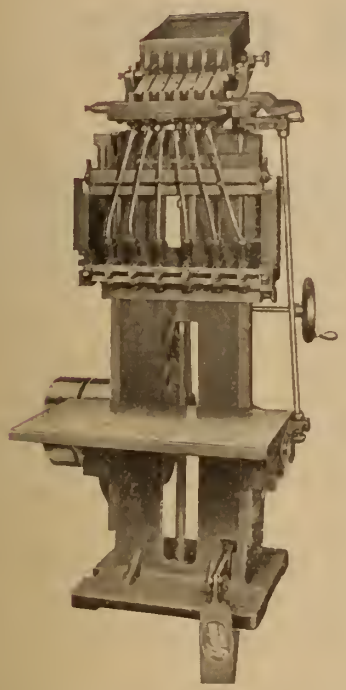

nailing boxes by hand—expensive too. Box making costs can be—have been greatly reduced by the use of Nailing Machines, and output greatly increased with less labor.

Companies installing Nailing Machines testify to the fact that by their use box making costs have been greatly reduced, while at the same time production has been increased as high as 50 per cent.

Don't hesitate to ask for information on any of our Nailing machines. We'll be pleased to point out to you their advantages, and send you circular illustrating and describing them.

P. B. Yates Machine Co. Ltd.

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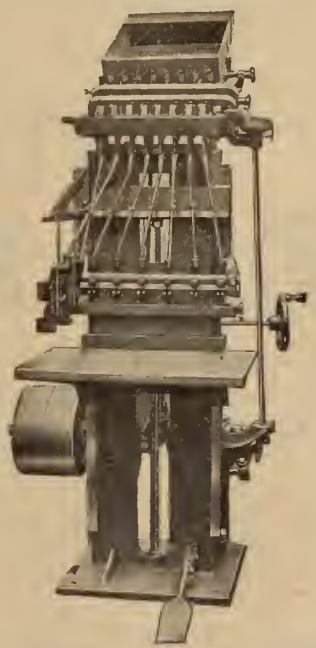
YATES

BOX NAILING AND CLEATING MACHINES

ENTIRELY AUTOMATIC

EASILY OPERATED



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MADE IN ALL SIZES

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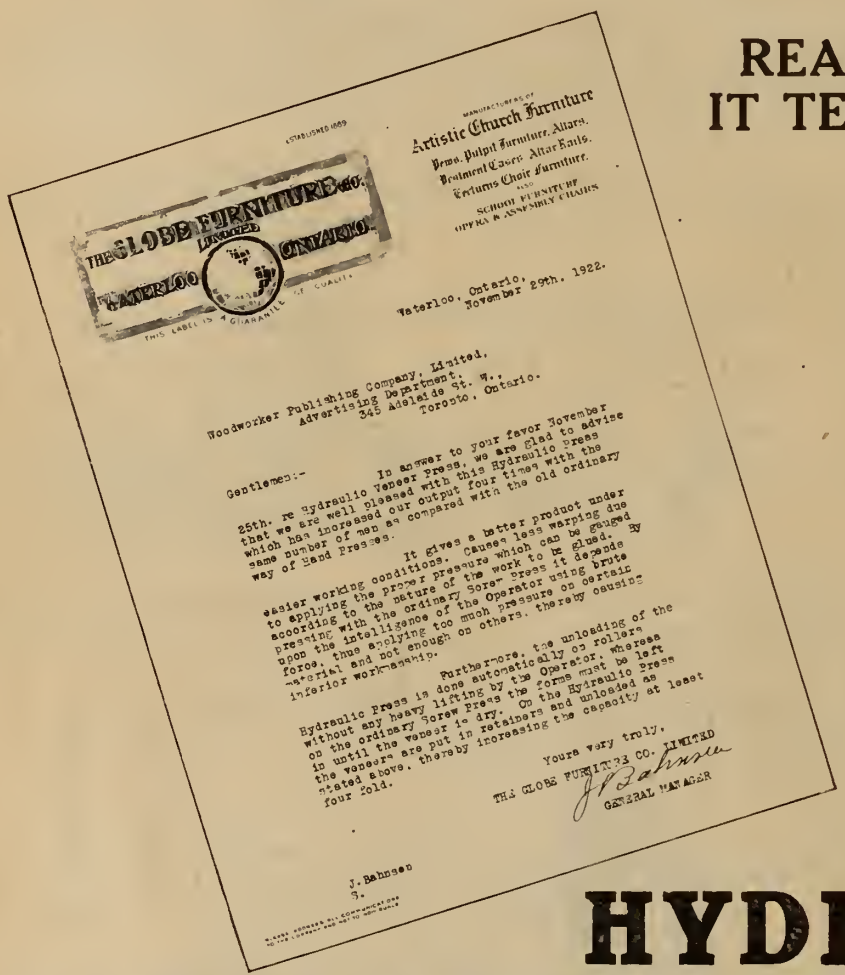
"—increased output four times with the same men"



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Manufacturers of Artistic Church Furniture
Pews. Pulpit Furniture. Altars.
Pedestal Desks. Altar Rails.
Lectern Choir Furniture.
SCHOOL FURNITURE
OFFICE & ASSEMBLY CHAIRS

Waterloo, Ontario,
November 29th, 1922.

Woodworker Publishing Company, Limited,
Advertising Department,
345 Adelaide St. W.,
Toronto, Ontario.

Gentlemen:-

In answer to your favor November 25th. re Hydraulic Veneer Press, we are glad to advise that we are well pleased with this Hydraulic Press which has increased our output four times with the same number of men as compared with the old ordinary way of Hand Presses.

It gives a better product under easier working conditions. Causes less warping due to applying the proper pressure which can be gauged according with the ordinary Screw Press it depends upon the intelligence of the Operator using brute force, thus applying too much pressure on certain material and not enough on others, thereby causing inferior workmanship.

Furthermore, the unloading of the Hydraulic Press is done automatically on rollers without any heavy lifting by the Operator, whereas with the ordinary Screw Press the forms must be left on until the veneer is dry. On the Hydraulic Press the veneers are put in retainers and unloaded as stated above, thereby increasing the capacity at least four fold.

Yours very truly,
THE GLOBE FURNITURE CO. LIMITED
J. Bahnsen
GENERAL MANAGER

J. Bahnsen
B.

READ THIS LETTER IT TELLS THE STORY

No need to take our word for it. Satisfied users exceed in their praise our most extravagant claims. The letter at the left is from one "well pleased" furniture manufacturer who sums up the many advantages of the press in a manner that will interest you. Read it. See what it has done for others.

THE PERRIN HYDRAULIC VENEER PRESS

The advantages of this press over hand and power screw presses are so clearly defined that the hydraulic type is fast replacing them in modern plants throughout the country. The Hydraulic Press provides more pressure, more even pressure and a measured pressure. This ensured the **correct** pressure being applied **evenly** over the entire surface of the veneer, something formerly impossible.

Because the Hydraulic Veneer Press handles more work with less labor, it is also an efficient and economical means of increasing production.

William R. Perrin Ltd. Toronto

"The above cut illustrates the result of our co-operation and a customer's idea."

It is our function to develop a high standard in furniture decoration; our business connections justify us in stating that we have succeeded to a large extent.

"Made in Canada"

JOHN WALTER & SONS LIMITED

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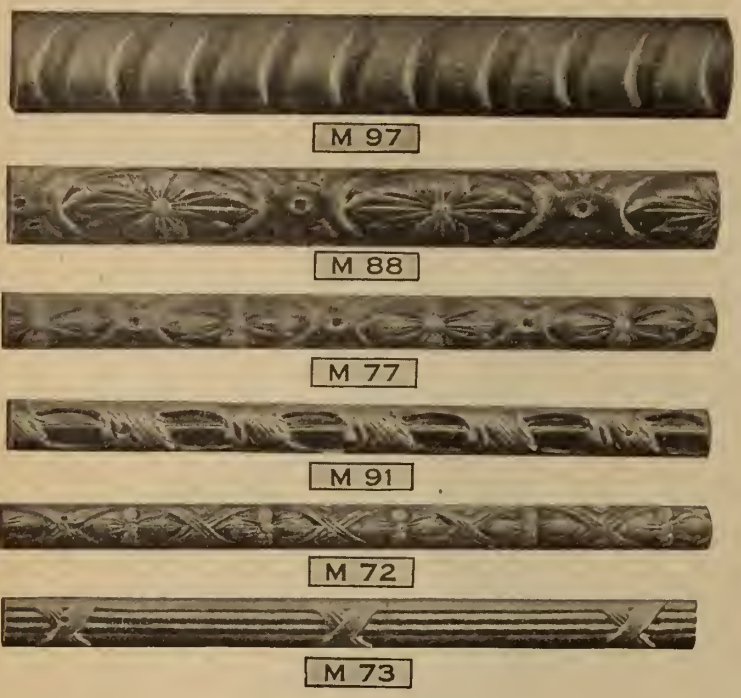

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KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.

Waddell Manufacturing Company

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"Machine Molder Practice," recently published by the Practical Books Co. 172 pages, 100 illustrations. Flexible leather binding. Price $3.00.

"The Utilisation of Wood-Waste," by Ernest Hubbard, Third English revised and enlarged edition, 236 pages, illustrated. Published in 1920 by Scott, Greenwood & Son. Price $2.00.

"The Kiln Drying of Lumber," a Practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J B. Lippincott Co. 316 pages, illustrated. Price $5.00.

Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price $3.00.

"Modern Practical Joinery,"—A comprehensive treatise on the practice of joiner's work by hand and machine. For the use of Workmen, Builders, Machinists and Architects. Containing a full description of drawing instruments and their use; tools, appliances and apparatus; methods and processes; joints and fastenings; woodworking machines; machine shop practice; preparation of work for machining; use of the steel square; house joinery, bank, office, church, museum, domestic and shop fittings, show cases, air-tight cases, splayed and shaped work; new materials and method, stairbuilding, foremen's work, fixing, and a description of nearly 150 woods suitable for joinery. Together with a comprehensive glossary and index. By George Ellis—fourth edition, extensively revised and much enlarged. With upwards of 1400 illustrations, including 20 double page and 41 photographic plates. Recently published by B. T. Batsford Limited, 570 pages. Price $12.50.

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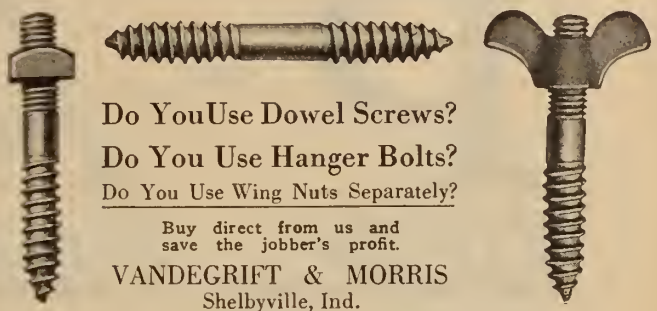

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Catalogue of legs and samples of mouldings sent on request. Send us your designs or samples of carvings for quotation.

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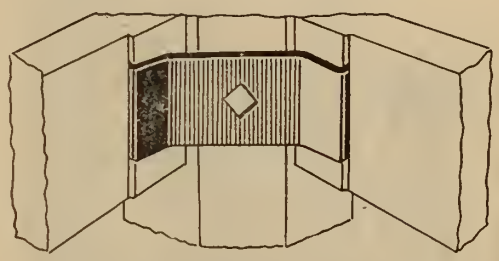

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Walnut's sheer beauty, strength, uniformity and permanence brought it in a few years to unquestioned supremacy in furniture construction. Dominance in furniture proves but the beginning. This surpassing merit is every day compelling increased use in new cabinet fields. Pickrel walnut veneers fill an important place in this wider development. A limitless selection of quality veneer logs, careful and skilled manufacture and a constant stock of five million to seven million feet of nicely assorted woods have given Pickrel walnut veneers a special significance. Buyers will appreciate the responsible, conscientious and experienced representation through which Pickrel veneers are offered at their respective plants. It assures the closest possible conformity to the individual requirements of each—meaning less cost in working and a better product.

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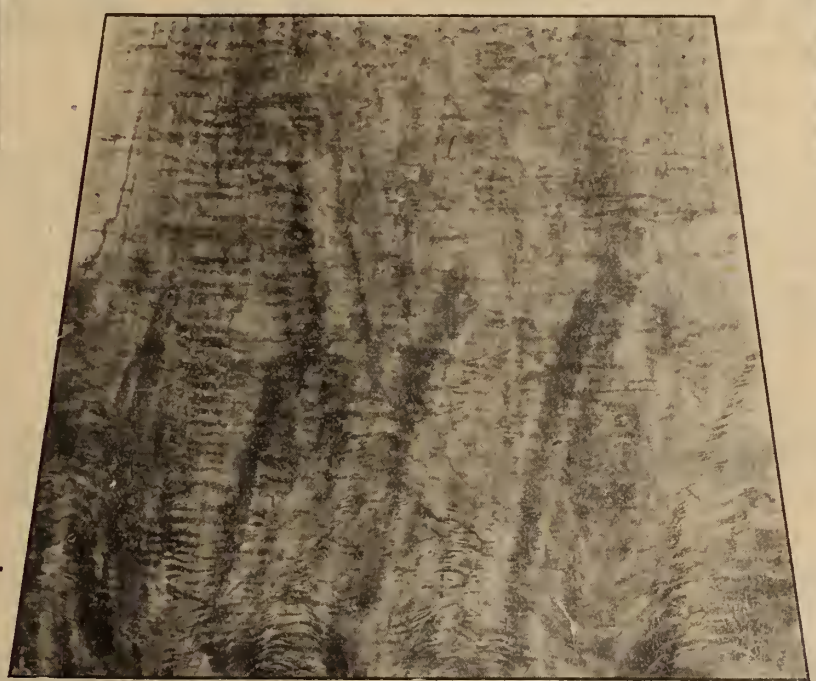
New Albany, Indiana



Scientific Utilization of Hardwoods from Tree Through Factory

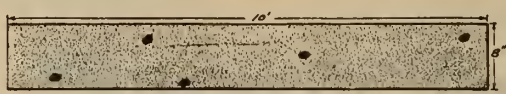
HARDWOOD MANUFACTURERS INSTITUTE
SCIENTIFIC UTILIZATION
TRADE MARK

No. 1 COMMON—

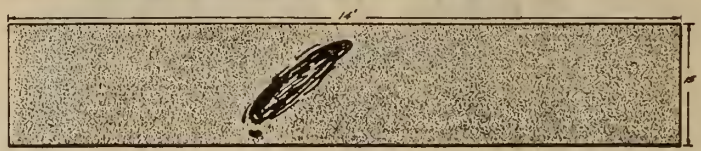
(A)

(B)

(C)



(D)



All of these Boards will grade No. 1 COMMON according to existing specifications.

(A) Obviously GOOD YIELD for Toy and Novelty Plant.
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And yet every class of factory buying No. 1 COMMON must accept them ALL and in no shipment does the factory know what sort of board is going to turn up.

WRITE FOR THE WHOLE STORY

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Regular size 24 x 48.
Stakes 30 inches high.
Centre wheels 14½ in., diam., 2 in. face.
Steel stem castor wheel 6 1/4 in. dia., 1 1/4 in. face.
Weight 160 lbs.
Special sizes to order.

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Office and Mill: McLean Ave. and Union Belt R.R.

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We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark.

Memphis - Tenn.

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QUARTERED WHITE OAK

3	cars	4/4″	Fas.
5	"	4/4″	No. 1 Common.
1	"	4/4″	No. 2 Common.

PLAIN WHITE OAK

2	cars	4/4″	Fas.
2	"	5/4″	No. 1 Com. & Btr.
3	"	4/4″	No. 1 Com. & Sel.
3	"	4/4″	No. 2 Common.

QUARTERED RED OAK

3	cars	4/4″	Fas.
6	"	4/4″	No. 1 Common.
2	"	4/4″	No. 2 Common.

PLAIN RED OAK

2	cars	4/4″	Fas.
3	"	5/4″	Fas.
3	"	6/4″	Fas.
2	"	8/4″	Fas.
8	"	4/4″	No. 1 Common.
2	"	5/4″	No. 1 Common.
2	"	6/4″	No. 1 Common.

QUARTERED RED GUM

2	cars	4/4″	Fas.
2	"	4/4″	Fas. Fig.
2	"	5/4″	Fas.
2	"	6/4″	Fas.
10	"	4/4″	No. 1 Common.
2	"	5/4″	No. 1 Common.
2	"	6/4″	No. 1 Common.

QUARTERED RED GUM S.N.D.

5	cars	5/4″	No. 1 Com. & Btr.
5	"	6/4″	No. 1 Com. & Btr.
10	"	8/4″	No. 1 Com. & Btr.

ASH

4	cars	10/4″	No 1 Com. & Btr.
2	"	12/4″	No. 1 Com. & Btr.
1	"	6/4″	No. 1 Com. & Btr.
2	"	4/4″	No. 1 Common.
2	"	4/4″	No. 2 Common.
2	"	5/4″	No. 1 Com. & Btr.

SAP GUM

8	cars	4/4″	Fas.
3	"	5/4″	Fas.
3	"	6/4″	Fas.
15	"	4/4″	No. 1 Common.
8	"	4/4″	No. 2 Common.
5	"	5/4″	No. 1 Common.
5	"	6/4″	No. 1 Common.

COTTONWOOD

2	cars	4/4″	Fas.
6	"	4/4″	No. 1 Common.
3	"	4/4″	No. 2 Common.

ELM

2	cars	4/4″	Log Run.
2	"	5/4″	Log Run.
1	"	8/4″	Log Run.
6	"	10/4″	Log Run.
6	"	12/4″	Log Run.

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Gray Elm and Brown Ash
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Unequalled facilities for rapid dispatch, by Rail, Lake or Barge Canal, on all your requirements, large or small.
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1" to 4 No. 1" Common and 1s & 2s **HARD MAPLE**
Excellent widths and lengths.
Can kiln dry and surface.
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The quality which above all else builds the reputation by which a company and its product are favorably known—

Service

"Labor performed in the interest of others; act of helping another with the purpose of promoting his interests in any way." *Standard Dictionary*

"A benefit or advantage conferred or any system or organization for the accomplishment of such duty." *Standard Dictionary*

"An agency for the accomplishment of some constantly needed work or the supply of some general and recurrent demand." *Standard Dictionary*

"A professed willingness to exert oneself in obedience to another and for his interests." *Standard Dictionary*

"In a general sense, labor of body or mind . . . . for the benefit of another." *Webster's Dictionary*

"Advantage conferred; that which promotes interest or happiness." *Webster's Dictionary*

To serve: "To be sufficient for; to satisfy; to content." *Webster's Dictionary*

"To perform duties; to accomplish the end." *Webster's Dictionary*

"To be of use." *Webster's Dictionary*

FAITHFUL and reliable performance of the work for which a product is intended, and all that a progressive concern does to make its product available to others, constitute modern industrial service.

In Herman Behr & Company, Inc., Service begins with the study of your manufacturing requirements to produce something that will meet them better than anything else. The experiments of our Research Laboratory, hundreds of trials of new ideas and methods, plus skilled workmanship, a discriminating selection of the best raw materials, the experience and technical background of three generations, combine to make the best product that human ingenuity can produce.

Our visiting salesmen are qualified to be of service to you in solving your sanding problems, to effect a saving in operating costs, time or labor. These men are equipped for service by reason of their long experience—averaging 15 years spent in dealing daily with the sanding problems that confront you.

Service behind the scenes—when your order reaches our office, it is handled by a man who feels that he is dealing with you personally, has perhaps called on you and knows you well. He feels that way and nothing is more important than that he personally should follow your order through the various factory departments, to start it on its way to you without delay.

As an additional service, this Company maintains branch offices and warehouses at important centers, where stocks are on hand so you may have the goods where and when you want them.

For Sandpaper Service—Write, wire or phone

HERMAN BEHR & CO., Inc., 31-63 Tiffany Place, Brooklyn, New York City

Chicago San Francisco St. Louis London Grand Rapids Boston

Montreal: 81 Grey Nun Street Toronto: 361 Sorauren Avenue

1872 - Pioneers in the Improvement of Sandpapers for Fifty-one Years — 1923

INVENTORS & SOLE MANUFACTURERS OF OPENKOTE SANDPAPERS. LOOK FOR THIS TRADE MARK

What would Robinson Crusoe have done without his man Friday?

Won't you let us be your man Friday when it comes to taking care of your lumber requirements? We have a complete stock on our yard and keep in touch with saw mills with unlimited stocks.

Send us your inquiries for straight or mixed cars

R. R. May Hardwood Co.

1522 S. Sixth St. Louisville, Ky.

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Ply Wood Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. GREENFIELD, OHIO

Table Slides Table Slides Table Slides

You have tried the rest, now use the best.

WATERTOWN TABLE - SLIDE COMPANY

Watertown, Wisconsin, U.S.A.

AMERICAN BLACK WALNUT

LUMBER **VENEERS**

OUR SPECIALTY

A goodly supply of choice stock on hand at all times.

BAND MILL IN DAILY OPERATION

It will be a pleasure to figure on your requirements.
With the growing demand and the increasing popularity of Black Walnut, you, naturally wish to be prepared to meet this demand. Our suggestion is that you cover your needs early.

1/28″ SLICED WALNUT VENEERS

especially selected for quality wood and color.

LET US HAVE YOUR INQUIRIES

The Kosse, Shoe and Schleyer Co.

Lock Box No. 18 St. Bernard, Cincinnati, Ohio.

Agents in all Furniture Centres.
Branch Office: Grand Rapids, Mich.
Represented in Chicago, Rockford, Ill., Detroit, Kitchener, Ont., Canada, Utica, N.Y. New York City and San Francisco

The Gulf Lumber and Trading Corporation

NEW ORLEANS, LA.

BAND SAWN **MAHOGANY LUMBER** EXCLUSIVELY

We always carry a large stock of high grade Mahogany Lumber in all dimensions and grades on our yard in New Orleans

Your Inquiries will be appreciated

General Office, NEW ORLEANS, U.S.A

When you want Quality Walnut

Let us demonstrate to you the merit of our IOWA WALNUT. No pains or expense is spared to make it the outstanding American Black Walnut for the making of fine furniture.

Our mill is devoted exclusively to cutting walnut. Its machinery and equipment, which is of the most modern design, has been selected with reference to the particular needs of walnut production.

Especial skill and pains is taken to bring out in the cutting all the rich coloring and beautiful marking with which the deep rich soil of the Iowa Farm lands on which they were grown has endowed them.

When you want a particularly good lot of black walnut let us quote you on your needs. You will find our prices surprisingly low.

Des Moines Sawmill Company

1024 Murphy St., Des Moines, Iowa

Write or Wire for Prices— No higher than ordinary Walnut

IOWA Walnut

"Hartzell's Choice Walnut"

The way Walnut comes to us

COMING AND GOING

One constant stream of American Black Walnut from "Stump to Consumer" flowing through a steady, reliable and satisfactory channel

"Geo. W. Hartzell"

Logs in the rough coming in Veneers and Lumber of the highest quality going out daily year in and year out covering a period of 35 years.

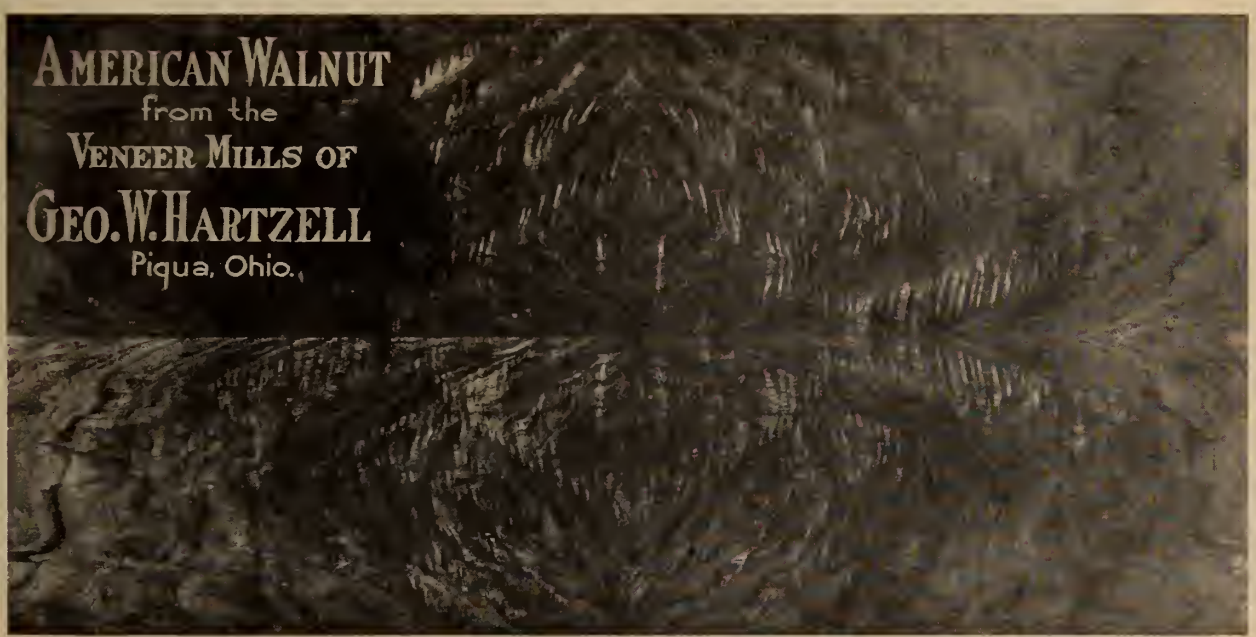
We rightfully claim your patronage because of "SERVICE and QUALITY," if there is any question in your mind about it

"Try Us and We Will Ship You the Convincer"

No Order too large, no Order too small to receive the close and careful attention it is our custom to give. That is a great part of our business, serving our customers.

"WRITE FOR SAMPLES AND QUOTATIONS"

Geo. W. Hartzell - Piqua, Ohio



The way it goes to our Customers

One of the Ritter Operations

The Growth of a Big Business

From one circular sawmill with small production, to thirteen band mills with an annual capacity of 130,000,000 feet of Appalachian Hardwoods, has been the remarkable growth of our business in twenty-five years.

During this period we have manufactured and sold more than 2,000,000,000 feet of lumber to 5,500 satisfied customers.

Such growth would have been impossible had not our product been superior, our business standard the highest, and our Policy of Service built on recognition of the fact that we prosper only as those we serve prosper.

Write for quotations on Appalachian Oak

W. M. RITTER LUMBER COMPANY
COLUMBUS, OHIO

RITTER
APPALACHIAN OAK

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE, LA.

Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

BEDNA YOUNG'S SOUTHERN HARDWOODS

The quality and saleability of your furniture depends primarily upon your selection of hardwoods, for without good material the finest craftsmen are helpless. Play safe—always choose Bedna Young's hardwoods. Fine, figured, quartered oak a specialty.

BEDNA YOUNG LUMBER CO.

Jackson, Tennessee

From Old Kentucky

The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

Ash, Oak, Gum, Poplar, Hickory, Walnut, Chestnut, Beech, Maple, Elm, Sycamore, Cottonwood. Quotations promptly.

J. V. STIMSON & CO.
Owensboro - Kentucky
Bandmills: Owensboro; Campbellsville, Kentucky

Mercereau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern
HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of
C. W. PETERS
Vice President and Manager of Lumber Dept.

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

56 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar both plain and quarter sawed, Sound Wormy Chestnut, Cypress and Ash.

"Wire collect for prices or other information. Time is Money, delays pay no dividend."

La Tuque Turpentine

Made by an improved laboratory process from Canadian woods.

An excellent thinner for paste, colors, enamels, stains, paints and varnishes.

La Tuque Turpentine contains no free rosin.

The quality is there
The price is right

Write us for particulars

BROWN CORPORATION
56 St. Peter St., QUEBEC, P.Q.

Do You use
BASSWOOD?

Panels made from fresh cut logs are of the finest quality, and can only be made during the winter. We have new logs arriving daily. Look up your stock and order Now, so you will be sure to have the Very Best in Basswood.

AMERICAN PLYWOOD CORPORATION
New London, Wisconsin, U.S.A.

"Better Use Birch"

The
Strength of Birch

Birch is one of the hardest of all woods in commercial use, and here its extreme hardness stands for strength. The rediscovery of this property by the cabinet maker has led to its vastly increased use in furniture factories.

Beauty in wood is a prime requisite but of little value without strength that makes it permenent. The slow growth of of Birch gives it a natural toughness, which compares favorably with that of more expensive woods.

All finishes and enamels may be used equally well, for the tightly woven fibres provide a surface that offers great resistance to dents and hard usage of all kinds.

Birch lends itself admirably to the creation of furniture novelties, and lines such as this gate-legged table. Its desirable qualities of beauty, strength and economy are particularly adapted to this type of furniture.

Anderson, Shreiner & Mawson

Colonial Bldg.,
13 King St. West,
Toronto

HARDWOOD LUMBER

Mills at
South River
Ontario

The

Pembroke Plywood Co.

Pembroke — Ont.

Rotary Cut Veneers, Panels etc., from Native Woods.

All Panels made with best Waterproof Glue and guaranteed.

Inquiries Invited.

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

ORILLIA ONTARIO

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

GARAGE DOORS

SPECIAL

Made of good old Canadian Spruce
1¾" thick for opening 8'-0" x 8'-0".
6 lights top of each door—insert sash.
⅞" beaded spruce ceiling panel.
Wide stiles making heavy, strong frame.

$17.50 Per Pair

F.O.B. TORONTO

Shipment same day order is received.
Special prices in lots of 10 to 50 pairs.

PANNILL DOOR CO. LTD.

131 Front St. East - - - Toronto

Main 623

PEDWELL — Since 1883 — Service to Hardwood Users

Pedwell's Canadian Hardwoods

Canadian Hardwoods are eagerly sought by the the large American users. WHY? The texture of our northern grown ELM and our BEAUTIFUL BIRCH is not found elsewhere.

Our Ontario salesman has a list of more than TWO MILLIONS of dry Canadian Hardwoods for prompt shipment. Let us have that enquiry to-day.

The Pedwell Hardwood Lumber Company

FOOT SPADINA AVENUE - - - TORONTO

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

TENNESSEE SCENTED CEDAR

1 in.—28,000
1¼ in.— 1,800

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	44,000	9,000	123,000	218,000
1¼ in.	21,000	200	13,000	15,000
1½ in.	8,200	......	31,000	86,000
2 in.	8,000	......	29,000	63,000
2½ in.	4,500	......	4,300	3,000
3 in.	21,700	......	6,500	4,000
4 in.	4,300	......	900	......

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	2,500	......	3,000	......
1 in.	124,000	6,000	202,000	40,000
1¼ in.	13,000	800	27,000	30,000
1½ in.	9,700	1,600	80,000	57,000
2 in.	12,000	......	22,000	23,000
2½ in.	3,000	......	400	......
3 in.	1,300	......	......	......
4 in.	1,500	......	300	......

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	......	74,000	21,600	2,000
¾ in.	88,000	224,000	31,800	9,000
1 in.	63,000	19,000	9,400	50,000
1¼ in.	15,000	23,000	5,000	1,100
1½ in.	31,000	19,200	4,000	......
2 in.	44,000	121,000	26,000	5,000
2¼ in.	1,500	1,400	......	......
2½ in.	94,100	33,000	......	......
3 in.	5,800	19,000	7,000	12,000
4 in.	2,600	4,600	......	......

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	......	7,000	15,900	3,000
¾ in.	108,000	257,000	38,000	37,000
1 in.	58,000	25,000	16,200	78,000
1¼ in.	60,000	2,600	......	......
1½ in.	30,000	33,000	......	......
2 in.	16,000	54,000	7,000	6,000
2½ in.	117,000	45,000	2,000	1,800
3 in.	15,000	41,000	2,400	600
3½ in.	4,500	5,000	......	......
4 in.	26,000	17,800	......	......

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,700	......	5,700	500
1 in.	6,200	5,400	9,000	1,400
1¼ in.	5,900	......	900	......
1½ in.	......	......	......	......
2 in.	......	......	7,400	......

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	......	......	......
⅝ in.	2,800	......	700	800
¾ in.	3,900	......	6,300	3,000
1 in.	44,000	1,300	12,000	700
1¼ in.	3,000	4,300	2,000	200
1½ in.	9,000	500	2,500	......
2 in.	8,500	......	23,000	5,700
2½ in.	1,000	......	400	......
3 in.	1,800	......	700	......
4 in.	2,500	......	1,700	......

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	......	2,500	......	......
1¼ in.	1,400	14,000	2,000	9,00C
1½ in.	......	1,800	11,200	3,000
2 in.	5,100	2,400	......	4,700
3 in.	......	......	......	300

QUARTERED SAP GUM

		1 & 2	No. 1C	No. 2C
4/4	......	......	1,800	......
5/4	......	14,000	......	......
8/4	......	34,000	20,800	300
10/4	......	8,000	15,000	1,800
12/4	......	300	......	300

PLAIN RED GUM

		1 & 2	No. 1 Com.	No. 2 Com.
1 in.	......	89,000	64,000	......
1¼ in.	......	32,000	21,000	700
1½ in.	......	27,000	48,000	14,500
2 in.	......	4,000	300	......

QUARTERED RED GUM

		1 & 2	No. 1C	No. 2C
4/4	......	16,000	37,000	......
5/4	......	22,000	21,000	700
6/4	......	27,000	51,000	5,600
8/4	......	48,000	24,000	12,000
10/4	......	1,500	......	......

POPLAR

	1 & 2 18 & up	1 & 2	No. 1 Com.	Bright Saps
⅝ in.	1,500	24,000	10,300	1,900
¾ in.	......	8,500	9,000	2,300
1 in.	1,100	57,000	184,900	43,800
1¼ in.	3,300	11,000	45,000	1,700
1½ in.	6,300	12,000	34,000	28,500
2 in.	......	5,300	8,000	18,800
2½ in.	......	7,000	7,000	13,800
3 in.	......	4,000	......	15,000
4 in.	......	5,400	3,500	8,200

Also Large Stocks of Ash, Basswood, Beech, Birch, Hard and Soft Maple.

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Produced by the North American Bent Chair Co.

BIRCH—Your Inevitable Choice for Moderate Priced Lines

The increasingly prominent place taken by Birch in the manufacture of moderately priced furniture testifies to the admirable way in which it lends itself to this type of production.

Beauty is there in the graceful figuring and satin texture, which the extreme hardness of the wood preserves under the most careless treatment. Strength, too, and economy in handling, while the clear even grain of the wood permits of the best effects being attained with all finishes and enamels. These qualities are found to an unusual degree in Clark Birch. You will do well to investigate its merits for your new productions.

Specialty E C & S *Birch*

Edward Clark & Sons Limited

807 Bank of Hamilton Building **Toronto, Canada**

EFFICIENCY ***COURTESY*** ***SERVICE***

OTIS
TRADE MARK

Tabasco
Honduras

ESTABLISHED 1867
INCORPORATED 1886

Laguna
Mexican

MAHOGANY

Rarely are such stores of precious wood to be found as may be seen in our yards. Across the seas from tropic lands it comes. From thick jungles where the light of day but dimly penetrates and where tangled native paths make difficult the bringing out of timber. Here the black man labors, risking life from jungle dangers, that supplies will not diminish and your orders may be filled.

Twelve million feet per year is the capacity of OTIS mills. An adequate supply is always on hand for prompt shipment. Get our prices.

Otis Manufacturing Company

Peters Avenue and The River

NEW ORLEANS, LA.

Chicago Office: Room 208, 128 N. Wells Street

Air Dried or Kiln Dried?

Kiln dried stock will mean an advantage to you—a material reduction in weight with a resulting reduction in freight cost. Kiln-drying in our plants means the latest and most improved methods together with efficient handling.

Any of the following items in Southern Hardwoods can be shipped promptly from our band mill at Little Rock, Arkansas. Band sawn in our own mill, dry, good widths and excellent lengths, this stock graded according to National Hardwood Lumber Association rules represents a good value for you.

QUARTERED RED GUM

3	cars	5/4"	FAS
1	"	8/4"	FAS
1	"	12/4"	FAS
3	"	5/4"	No. 1 Com. & Sel.
6	"	6/4"	No. 1 Com. & Sel.
2	"	8/4"	No. 1 Com. & Sel.
½	"	10/4"	No. 1 Com. & Sel.

QUARTERED SAP GUM

4	cars	5/4"	FAS
1	"	8/4"	FAS

QUARTERED WHITE OAK

1	car	4/4 x 10 & wider	FAS
1	"	5/4"	FAS

QUARTERED FIGURED RED GUM

2	cars	4/4"	No. 1 Com. & Sel.

PLAIN RED GUM

½	car	6/4"	No. 1 Com. & Sel.

WEIGHTS PER THOUSAND FEET

	Air Dried	Kiln Dried
Oak	4400	4000
Red Gum	3500	3200
Sap Gum	3300	3000

If you do not see just what you want in this list, write us giving your requirements. Our mill is now cutting excellent quality Southern Hardwoods.

E. L. BRUCE COMPANY
MANUFACTURERS
MEMPHIS, TENN.

Band Mill: Little Rock
Oak Flooring Plants: Memphis; Little Rock

Sawed Veneer

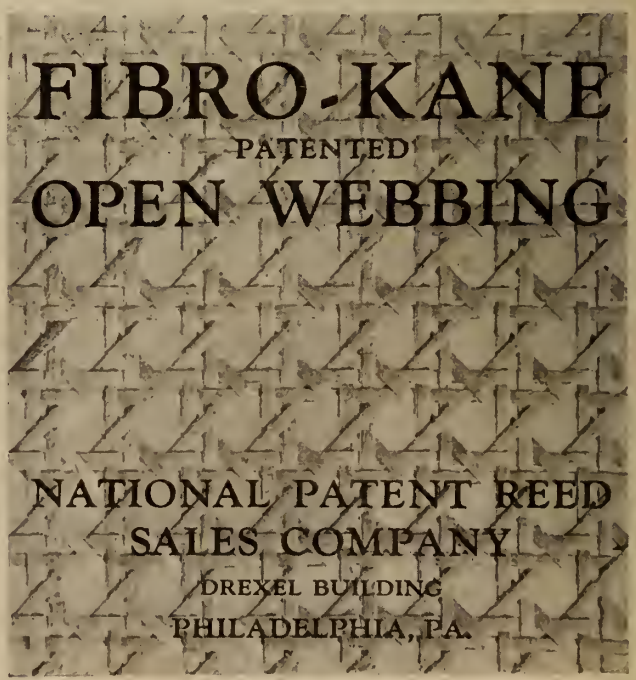
Quartered White Oak
For Furniture and Panels

Plain Red Oak
For Interior Trim and Doors

Cypress
For Battery Separators

Manufacturing Uniformly Good. Quality Unsurpassed

James E. Stark & Co., Inc.
MEMPHIS, TENN.



Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods
White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES—that you can afford to pay
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

To Our Friends

We announce with pleasure the consolidation of our entire interests with the Kneeland-Bigelow Company and Kneeland, Lunden & Bigelow Company, effective January First, Nineteen Twenty Three. This amalgamation will thereafter be operated as a corporation with the present officers and management under the title of

Kneeland-Bigelow Company

The extensive timber resources and manufacturing and distributing facilities of the combined interests will promote more efficient organization and highly developed service to the benefit of our customers. We bespeak for the new organization the same consideration accorded us in the past.

Respectfully

THE BIGELOW-COOPER CO.
BAY CITY - - MICHIGAN

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

Mills: Coal Grove, Ohio

General Offices: 33 Rector St. New York City

GLIMPSE NUMBER TWO INTO THE HARDWOOD LUMBER OPERATIONS OF

E. SONDHEIMER CO.

CABLE ADDRESS: SONDERCO, MEMPHIS

MANUFACTURERS AND EXPORTERS OF HARDWOOD AND GENUINE LOUISIANA RED CYPRESS

BAND MILLS MANUFACTURING

GUM
COTTONWOOD
OAK
TUPELO
ASH
CYPRESS
PECAN
WILLOW
ETC.

SONDHEIMER TALLULAH AND ALEXANDRIA LOUISIANA

WRITE OR WIRE FOR PRICES

BUILDING RAILROAD INTO VIRGIN FORESTS OF RED GUM AND OTHER NATIVE HARDWOODS

SONDHEIMER, LOUISIANA

OFFICES SELLING

GUM
COTTONWOOD
OAK
TUPELO
ASH
CYPRESS
PECAN
WILLOW
ETC.

N. McLEAN AND CHELSEA AVENUES MEMPHIS, TENN.

WRITE OR WIRE FOR PRICES

A Permanent Lumber Service

AFTER several years of inactivity we are now cutting on our modern fully equipped mills at Manistique and Little Lake, Upper Michigan. The timber behind these mills was purchased many years ago by the Stack interests from the then "unlimited" supply. Its quality, particularly the maple and birch, is the envy of northern mill men among whom this tract is famous.

This timber will run the mills to full capacity for fifteen to twenty years. The 40,000,000 feet annual cut will run:

15,000,000 ft. maple annually
6,000,000 ft. birch annually
2,500,000 ft. beech annually
2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually
the balace in Spruce and Tamarack.

Our exceptional service, grades, and manufacture will be maintained. "Low freight rate shipments by water to Toronto, Montreal, Owen Sound, Port Arthur, and other Great Lakes and St. Lawrence River Ports. Conveniently located also for rail shipments to inland points by the C.P.R. or Soo line."

We will be pleased to hear from old friends and from new ones who can understand and appreciate what permanent connection with such a source of supply would mean.

STACK LUMBER CO.
ESCANABA MICHIGAN

97%

of Furniture and allied lines are sold on the recommendation of the Retail Merchant

In the eyes of the Consumer he is responsible

BANNING

For

Hardwoods

Oak
Ash
Walnut
Mahogany
Poplar
Chestnut
Gum

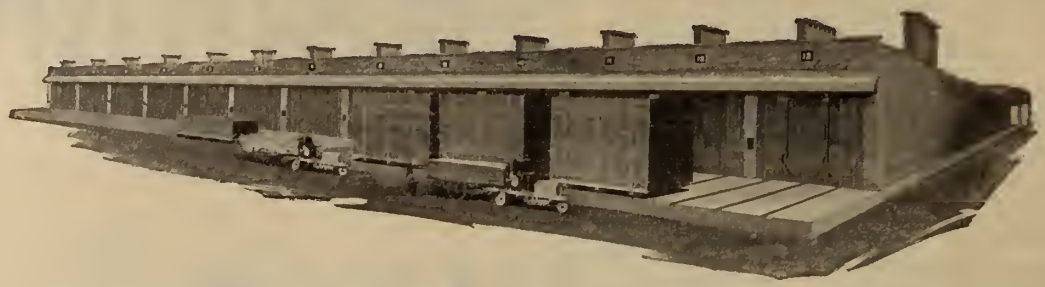
Our Prices and Values are Right

Give us a trial on your next order.

We want you to see our stock.

Canadian Representative
A. E. KLIPPERT
11 Laxton Ave.
Toronto, Ontario

KILN DRIED HARDWOODS



Kiln capacity 3,000,000 ft. monthly

WEST VIRGINIA
OAK
CHESTNUT
WHITEWOOD
BIRCH
HICKORY

We earnestly solicit your inquiries

AROMATIC RED CEDAR

ARKANSAS
RED GUM
SAP GUM
OAK
ASH
ELM

The M. B. Farrin Lumber Co.

CINCINNATI, OHIO

"We also ship air seasoned stock direct from our mills"

ESTABLISHED 1892 INCORPORATED 1916

ROBT. BURY & CO., Canada

LIMITED

1 Spadina Avenue, Toronto

Our Dry Kilns have a capacity for drying 200,000 feet per month. We will dry your transit cars

All Canadian and American Hardwoods
Mahogany, Walnut, Veneers and Panels of every description

Kiln dried stock carried in all woods

VENEERS—Mahogany, Walnut, Oak, Birch, Basswood, Ash, Maple, Elm and Gum
Log run or cut to dimension

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Training in Foremanship

Ten years ago the importance of foremen training was not realized as it is today. The idea that was prevalent then was that the foreman was merely a workman who had been dignified with a small amount of responsibility. He was recruited from the ranks of the skilled workers, automatically qualifying for foremanship and receiving his promotion in the order of seniority as vacancies occurred. Essentially he was a man whose sole training, practically, was in his particular craft. If he were fitted with the executive ability that his managerial duties demanded, it was largely accidental or because the man took sufficient interest in his work to develop his ability through his own initiative.

The tendency nowadays, however, it to recognize that foremanship has its own requirements which demand that the average foreman be properly trained in order that he may thoroughly master them. Indeed, it may be said that foremanship is a craft or trade in itself and that training in it is a prime factor in production efficiency.

In a very real sense the foremen may be regarded as the backbone of the plant, for they are the point of contact between the management and the men. On them the factory manager depends for applying the plans and policies of the management, for maintaining departmental efficiency and economy, for minimizing labor turnover and for keeping up the specified and scheduled production.

This means that the foremen are really part of the management and that they need a training in the fundamentals of industry and of management so that they may be better able to perform these supervisory and managerial duties. Training courses have, therefore, been developed which have met with marked success in many cases. If in some instances they have not been as satisfactory as desired, it is chiefly because the educational work has not been built up on the proper basis.

One excellent training course, for example, which has been developed by an organization that specializes in business training, aims to broaden the foreman and give him a surer grasp of the whole subject of factory production by means of text books, lectures, problem work and group conferences. The training concentrates on such subjects as self-analysis, team work, team leadership, handling men, handling machinery, the use of production records, industrial organization and the principles of management. Another educational course that has produced satisfactory results is the one outlined in an article elsewhere in this issue by the general superintendent of a western millwork plant. It makes interesting reading to follow the subjects assigned to the different meetings, and to note the conclusions that were arrived at by the class.

What do these foremen training schemes accomplish? First of all, they develop men who better appreciate the extent of their managerial duties and who, therefore make better foremen,—men who have been schooled to think and study, to weigh the pros and cons of proposed ideas and methods and to apply fundamental principles to their own production problems. The foremen acquire also a different aspect toward the management and toward their own responsibilities. They get that broad knowledge of industry that gives them a proper perspective of their relationship to both the men and the executives and impresses them with the importance of their functions as a go-between. Most foremen are simply promoted workmen and have never got the managerial point of view. A course of training in foremanship offers the necessary readjustment.

The results in the long run are equally as noticeable. The turnover of labor is lowered, better cooperation develops between the men and their superiors and between different departments, a finer relationship is promoted between the management and the foremen, waste is reduced and production is increased and improved.

A big scope exists for the institution of foremen education in the woodworking industry and these are results that will surely follow in the wake of such a foremen training course if it is carefully organized and conducted and whole-heartedly supported by the management.

Work as if you owned the place—and perhaps you may.

It is a big asset to a firm when the employees realize that they can always depend on it for a square deal.

What is Your Idea of Woodworking Speeds?

Can We not Collect Some Interesting and Extremely Valuable Information Relating to the Best Speeds or Feeds for Woodworking Machines? Data of this Kind Would Have a Definite Usefulness

By L. R. Wright*

This article suggests a lack of reliable speed and feed standards. In order that definite data with regard to what has been found to be the best speeds and feeds for some of the common types of woodworking machines may be secured and presented to our readers, will you send in to the editor of this publication a list of the speeds and feeds that you have found to give the best results covering the following:

Single surfacer	Circular saws
Double surfacer	Underfeed sander
Sticker	Roll feed sander
Heavy matcher	Automatic glue jointer
Shaper	Band saw
Belt sander	Band re-saw
Re-saw	Finger jointer or undercut planer

It is essential that the kind of wood, the feed and the saw or cutter head speed should be given, including the number of knives, as there is a definite relation between these various factors. Where the stock is pushed by hand, such as buzz planer or variety rip-saw, a definite feed cannot be given. The more details you give the better the basis for comparing and establishing standards.

That clearly defined standards of practice are essential to the development of any industry, is admitted on all sides, yet while woodworking is no exception to this general rule, very little progress has been made in this direction in the woodworking field. A definite common woodworking language is lacking. True terms and expressions of various kinds are used in different plants and the uninitiated might be led to believe that definite standards had been worked out and adopted, but an analysis of these terms usually discloses that they mean little, if anything at all.

Take "costs" for instance. All costs mean to the average woodworker is a hazy idea of what he guesses it should cost to produce a certain article, based on the sum total of his years of experience. As far as actual cost knowledge is concerned by definite figures, such a guess does not mean a thing. Recently, when asked if he was sure he was charging enough for his work, a woodworker replied that he was certain he was, because he had more money in the bank than he had a year ago. However, this does not hold true of all those engaged in this industry, for there are some who know what their costs are and to that extent are able to conduct their business with a fair degree of intelligence, though they know little or nothing about what their costs should be.

Take some other phases of woodworking practice. Does the term "standard practice" mean much when applied to the practical problems encountered in and around the plant. It must be borne in mind that while there are many ways of performing various operations, there is one best way of doing every single piece of work, one best speed, one best cutting angle, one best method of handling the work. The logical procedure would seem to be to determine what this one best way is, for different operations and different forms of work and, then adopt that as standard practice. How many knife marks per inch gives the best results for surfacing hardwoods? Would the same figure apply for softwoods or should it be lighter? What is the best sand belt speed, taking into consideration the rapidity with which the surface is cut down and the life or service to be secured from the belt. What are the best cutting angles and speeds for various kinds of saws? It is doubtful if any two saw filers use exactly the same hook and cutting angle yet the one best combination applied here would reduce the power consumed, increase the output of the saw and result in a smoother, better-sawn product.

Lack of Uniform Practice is General

The same lack of uniform practice is evidenced in other directions. How long should one inch hardwood be steamed preliminary to drying? In some plants the stock is steamed for two hours while in other factories the same class of material is steamed for from eight to ten days. If two hours gives the best results, ten days or two days or even one day is too long and just adds to the cost of the drying operation. It is seldom that two plants in the same locality and making similar products, dry their stock to the same moisture content. Other comparisons might be made covering the complete list of woodworking operations, including machining, veneering, assembling and finishing and the same lack of uniformity in practice would be found to exist.

This does not hold true in other industries. Take metal-working for example; the cutting speeds, an-

Speeds for Wood Working

Circular saw, 10,000 lineal ft. peripheral speed.
Planer or sticker, 45 cuts per inch for hardwood.
Planer feed, 35 ft. per minute.
Sticker feed, 70 ft. per minute.
Continuous Jointer, 50 ft. per minute.
Berlin or similar sander, 12 ft. per minute.
Shaper, 4,500 to 8,500 r.p.m.
Upright sand belt, 3,000 ft. per minute.
Upright sand drum, 3,500 ft. per minute.
Polishing belt, 3,500 ft. per minute.
Seat scooping machine, 12 seats per minute.
Sticker lathe head, 35 ft. per minute (single).
Sticker lathe head, 27 ft. per minute (double).
Mortiser, 8 to 14 ft. per minute.
Resaw, 45 lineal ft. per minute.
Multiple boring machine, 20 oscillations per minute.
Band saw (ripping), 8,500 lineal ft. per minute.
Band saw (fancy), 6,000 lineal ft. per minute.
Band saw (general), 6,500 lineal ft. per minute.
Automatic self feed rip saw, 135 ft. per minute .

*Statistican, Forest Products Engineering Co., Chicago.

gles and shapes of cutters and depth of cut have been definitely standardized for various classes of work and covering different classes and grades of material. This not only assists in securing maximum output, but enables the output to be predetermined with a satisfactory degree of accuracy.

The accompanying list of woodworking speeds and feeds was secured the other day. Some of the figures seem to be a fair average, others are amusing, while a few do not mean anything at all. They are being passed along without comment and without attempt being made to analyze them. After you have studied them and checked them with your ideas, based on what you have found to be most satisfactory, why not write the editor, giving what you consider to be the best speed or feed for the various machines listed. If you will do your part some interesting and extremely valuable information should be forthcoming. Watch for the analysis of the various replies received which will be published in an early issue.

Fine Displays at the Furniture Exhibitions

Toronto, Kitchener and Stratford Shows Exhibited a Record Number of Interesting and Attractive Lines—The Trend in Design and Finish—Greater Delicacy of Outline is Noticeable

The furniture exhibitions this year, in Toronto, Kitchener and Stratford, were remarkable both as regards size and the attractiveness of the goods exhibited. This is a record year in so far as the number of lines displayed is concerned and it is also probably safe to say that real progress has been made in the matter of workmanship and design.

The displays of living room furniture evidence the continued popularity of over-stuffed lines. Some of the exhibits of this class of goods were of striking beauty and demonstrated a resource in design which augurs well for maintaining a permanent place in public favor. Practically all the manufacturers have been influenced by the trend toward greater delicacy of outline. The pillow arm, while still shown in a number of lines, is being gradually replaced by the flare type—a concession to "style" at some expense in the matter of comfort. Mohair dominates in the more expensive suites, though there are also some particularly fine tapestries which run into high figures. The mohair coverings were shown in many combinations of plain and figured materials. Some of the larger manufacturers are getting down to standard combinations to which they give numbers. No. 1, for instance, may have plain back and arms, with figured seat and cushions, and front of seat plain, while No. 2 may have all figured except front of seat and arms, and so on.

In dining room and bedroom furniture, walnut finishes continue to lead. Two-tone effects are strong. Most of the manufacturers are also showing enamel finishes fairly strongly in the bedroom suites, greys, of course, predominating. Very pretty effects are produced in the enamels, but it is generally felt that this type of finish has not the staying qualities of walnut—it is not a type of furniture that one can live as long with without tiring of it. There is—and rightly so—a fear of offending the conservative Canadian tastes with anything that borders on the gaudy.

Mahogany finishes are shown to some extent in the bedroom suites, but not generally in the more expensive grades. Bow-ends are still to the fore, with little sign of being superseded.

In the less costly dining room sets, quarter-cut oak is of course the leader, at least one of the manufacturers has been showing it in very high-class Elizabethan designs. For a larger room this artistically massive type of furniture is very effective.

One notices the apparent popularity of the breakfast set. A very large number of manufacturers exhibited them, and evidently give a great deal of care and thought to their design.

The manufacturers of reed and rattan furniture are also making a big bid for the eye of the trade and the public. Some of the most elaborate displays seen at the exhibitions were of this type of furniture, and the finishes and coverings make a very striking first impression. It is interesting to note that one of the largest manufacturers of this type of goods is taking up fibre strongly and regards it as "the coming material."

Prices and Profits in the Furniture Trade

At the recent annual meeting of the National Council of Furniture Associations at Washington, D.C., W. H. Coye, cost accountant, made some very interesting comments on prices and profits which apply to a certain extent to Canadian manufacturers of furniture as well as to those of the United States.

Mr. Coye spoke in part as follows:

"I don't believe that all furniture manufacturers have as yet so priced all their pieces as to yield a profit. All doubtless have the inclination and probably will make it up during January markets. A large part of the orders now on the books of manufacturers are on an unprofitable basis. There is some speculation on the part of the retailer in placing orders. There are more orders on the books of manufacturers than at any time since 1920. If these orders are taken at their face value it may lead to pyramiding of orders for raw material and rising costs as a result.

"As yet, there is no justification for a general rise in prices except where readjustments are necessary, as in the case of 'leaders,' which heretofore have been put on the market at cost or under cost or where mirror plate or other raw materials which have advanced in price are involved and where higher prices should be made to cover these added burdens. The increase in the costs of mirror and plywoods has particularly affected the lower priced furniture. There are lots of houses being built and these will have to be furnished. That does not mean, however, that these houses will necessarily be furnished at a profit by the furniture manufacturer. The manufacturer must watch his order books and make certain that he is producing at a profit. Prices of furniture must be kept within the reach of the purchasing

power of the consumers otherwise I am fearful that there will be a certain reaction next spring.

"If it were possible for the manufacturer and retailer to agree on a delivery date when furniture is ordered a great step forward would be made toward stabilizing the industry. This would tend to keep the business within bounds and prevent duplication of orders, which always leads to speculation. If the dealer and manufacturer would agree that no cancellations would be made if furniture ordered was delivered on a definite date, I am of the opinion that both would derive immense benefits."

Nail-Holding Qualities of Wood Being Investigated

To the many thousands of tests which the Forest Products Laboratories of Canada have made at McGill University, Montreal, to determine the strength and other characters of Canadian woods has been added a series of tests on the ability of these woods to take and hold nails. It is felt that the results of such tests should have considerable significance for a number of manufacturers as the use of nails is not confined to the making of crates and packing cases but is the practice in certain departments of nearly every lumber-using industry.

The material used for these tests is part of that obtained for the making of strength tests. This fact will enable the results of nailing tests to be compared with those of other tests for strength, hardness, etc., on the same material. The pieces used for nailing tests are 4½ inches thick. The nails used are three inch wire nails of good Canadian manufacture.

Fig. 1—Testing the force required to drive nails into Canadian wood at Forest Products Laboratories of Canada, Montreal

The driving and pulling are done on a 30,000 pound Olsen Universal testing machine provided with special attachments for this work.

Thirty nails or more are driven by a special device into each piece of wood to be tested (Fig. 1). The nails are properly spaced and driven at a uniform speed to a depth of two inches by the machine which registers the force required to drive each nail. In the case of wood in the 'green' condition half of the nails are pulled out on the same day as they are driven and the piece put away to season, (Fig. 2). When air-dry, the rest of the nails are pulled out. The force required to draw the nails from green wood can therefore be compared with that required after the same wood is air-dry. Driving and pulling tests are also made on wood which is seasoned before the driving.

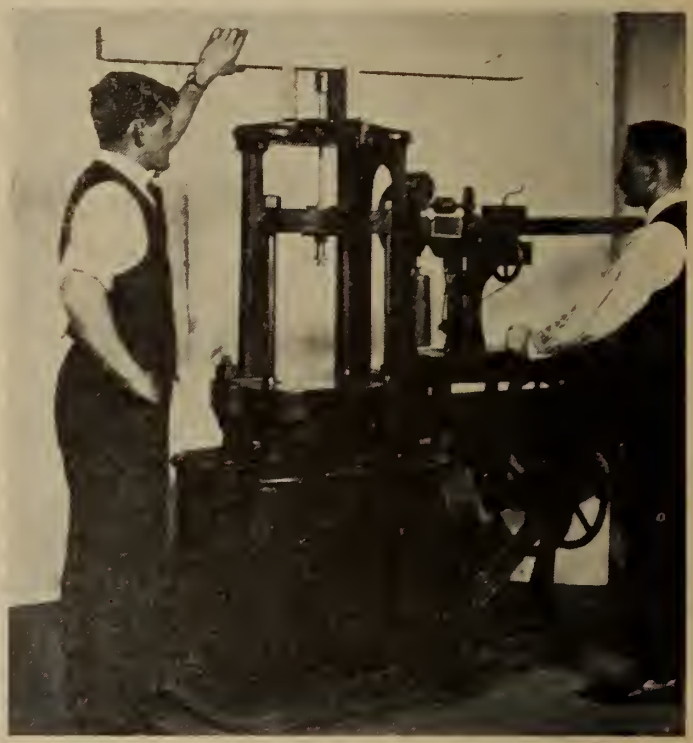

Fig. 2—Testing the force required to pull nails from Canadian woods at Forest Products Laboratories of Canada, Montreal

The work of testing all the commercial woods of Canada in respect of their nailing qualities will thus progress at the same speed as the strength tests and in a few months a number of interesting results should be available. The work can hardly be accelerated for seasoning takes time but if results of importance appear in the course of the work they will be published. It is thought that the results may have some influence on the selection of woods for certain purposes.

The nail-factor has not been overlooked at the Laboratories for although a single type of nail is used for tests in which different woods are to be compared as regards their nail-holding qualities yet it is recognized that the type of nail which should be used in the industries is of considerable importance. A series of tests has been begun on the driving and holding characters of different types of nails, plain, cement coated, barbed, etc. The behavior of these various types when used in certain commonly used woods is therefore being revealed by tests similar to those already described.

Is the Other Fellow Beating Your Price?

A Knowledge of Costs is the Only Guide in Determining a Legitimate Selling Price—Helps to Detect a Price Cutting Game on the Part of Your Competitors—Some Actual Instances

By R. E. L.

Nearly every branch of industry has a code of ethics, but it would seem that a person is justified on certain occasions in shutting his eyes to certain of the rules included in such a code. A manufacturer in Toronto told the writer some time ago about an experience he had had with a manufacturer of a competing line of goods. The line in qestion was an article of furniture. The competitor had cut prices to the point where there was no profit in the business for himself, and the other person was unfortunately placed because he was getting no business at all, not being willing to take it at the prices offered and lose money.

My informant, whom we will call C, naturally, was not going to stand idly by and watch his business get wiped out. He, therefore, instituted some inquiries concerning his unfair competitor, whom we will call B. C knew that B did not have any better plant than his, and also that he was no better equipped to manufacture the article in question. He had also heard from travellers calling on B that there seemed to be a lack of stability about the concern somewhere.

C's inquiries revealed to him that B was doing some high financing. His system was to cut prices to the point where there was no profit in the business, whether deliberately or in ignorance it is not known, and then, having received a large order from a well rated dealer, to go to lumber firms and others and get raw materials on the strength of the order. If the matter could not be handled in this way B would go to the bank, and by showing the bank the order get a loan, and then purchase raw materials. They had equipped their plant on the installment plan, and by juggling with the bank and lumber firms in the manner indicated were managing to keep the thing going.

The Value of a Knowledge of Costs

Of course, there was only one end possible to such a venture, but it looked as if considerable damage was going to be done to the other legitimate firms in the same line if B was allowed to continue on his fatal system. C, therefore, gathered together all his figures and a number of orders he had previously had from some of the same firms as B was selling to and approached the bank manager, armed with this data. B's career from then on was short, and consisted in winding up and getting out. The winding up didn't cause him a great deal of expense for moving vans because everything he possessed was seized to help to pay the debts.

In telling me of the incident C said he rather hated the method he had to resort to to get rid of the competition, but in any case it could only have meant a few months' salary to the individuals interested in B's company at the most because they were playing a losing game, and would certainly not have been allowed by their creditors to go much further without a show down. Even if C did transgress in the matter of strict business ethics I believe he was entitled to do so in view of the fact that B did not pay much attention to high business principles in competing in the unfair way indicated. Of course, there is just the possibility that they were ignorant of their costs. If so this is a strong argument for knowing your costs.

There was rather an illuminating sequel to this incident. The writer was relating it to a group of commercial men who were indulging in a discussion on the subject of costs. One of the group, who was travelling for a manufacturer of counter check books, etc., stated that it explained something to him that had puzzled him for a long time. It developed that he held the position of sales manager for the defunct company and had never been able to figure out just how their business was terminated so abruptly.

Beating the Price Cutter

I know of another instance where a manufacturer of a line of woodenware started into the price cutting game as a result of not knowing his costs. How his business was terminated shows how a group of manufacturers can, and do, band together to save themselves against unfair competition.

In this instance each of the manufacturers in the group manufactured a line of woodenware consisting of numerous articles. The firm cutting prices did not confine their cuts to any one line but cut on every line in the same indiscriminate manner. The group of competitors, therefore, each took one line which they were best qualified to manufacture and cut the price on that one line until the other fellow could not stand up under it. They were losing money, but they figured that it would pay them all to take a loss on one line for a time rather than let the other fellow continue his price cutting. The result was that the price cutter was beaten at his own game. When he went to solicit orders he was told that someone else had beaten his price. This applied on every article.

Ignorant as the man was of costs he knew he could not afford to cut any further. Whether he realized what had happened is doubtful, but the result was that he was forced out of business and he had nobody else to blame but himself. For a time while he was getting the orders he was laughing and telling how he was "making a killing," but I fancy he is not doing much laughing at the present time. There is a motto somewhere recorded about "self preservation being the first law of nature," and it seems to me that the fellows who cut prices, unless they are able to do this legitimately as a result of economies they are able to effect in their manufacturing methods, should carry this motto around in their hats and read it once in a while.

Lower Prices Because of Cheaper Manufacture

Some months ago a large manufacturer of chairs asked the writer if he knew of any chair factory in the country that was in a position to manufacture chairs cheaper than himself. It seems that he had been finding strenuous competition from some other

plant and could not decide in his own mind how it was happening. His travellers were being told of this cheaper line wherever they went, and he could not get a line on it. He had put it up to me because he happened to know that my duties had taken me to nearly every factory in the country at some time or another. As I was intimately acquainted with his factory he thought I would be able to make comparisons that would give him a clue as to where his keen competition was coming from.

He mentioned what part of the country he had reason to suspect, and it was an easy matter to tell him who his competitors were and why they could beat his prices. In this case, however, there was no unfair competition. The factory in question was more favorably situated, and could manufacture more cheaply. They had a small chair factory which they operated in conjunction with a sawmill, largely for using up the small stock they had left over after manufacturing the dimension hardwood that they specialized in. They had put in good equipment to handle this work, and thus they were able to manufacture more cheaply in every way. Their building laws, or lack of them, allowed them to build a building that no furniture manufacturer in a larger place could get by with, their labor was cheaper, and they were manufacturing largely from what would otherwise have been waste.

This was competition at which one could only look and hope it would not last. Fortunately, the manufacturer who was concerned about it did not need to do much worrying when the situation was explained to him. The competition did not threaten to put him out of business, or anything like that. It was only on one line of goods, and then the volume of goods turned out could easily be absorbed by the consuming trade without making any appreciable ripple on the surface of the general consumption.

The point I want particularly to bring out is that there are two ways of cutting prices, one due to a cheaper method of manufacturing, and one due to a determination to beat the other fellow out in securing orders regardless of manufacturing costs. The one and only way to know if you are justified in cutting your selling prices is to know what it is costing you to manufacture your products, and it is not necessary to go to a tremendous expense to install a cost system that will suffice for the ordinary sized plant.

There are still men in the manufacturing business who retain the idea that so long as they can keep track in their heads of the profits they are making, or the money they are losing, that a cost system is not necessary. I ran across one of these recently. He told me that he could tell the auditors before they went over his books at the end of the year just what profits his books would show. When asked how this helped him to figure on new work he stated that he could figure on a job alright. Anybody can figure on a job, I suppose, but how on earth do they know whether their figures are right or not unless they have some cost figures on similar work to guide them?

A man may go ahead figuring on this basis, and still show a profit at the end of the year, but he does not know whether he made money on every job that he undertook, or whether he lost on some and made on others. He may know approximately, working on the rule of averages, that he lost on some and made on others. Surely, then, it would pay him to know exactly which jobs made money and which ones stood him a loss.

There is one thing about installing a cost system in a plant and that is that a man must have a clear idea of just what he wants to arrive at. There are quite a few firms that have certain forms which they fill out religiously, but it is doubtful if they know just how to distribute the various charges properly. A man contemplating putting in a cost system should get in an expert that can be trusted not to introduce some system that is too cumbersome for the size of the plant and the amount of business done.

Some of the trade associations are carrying out some good work in this direction. They have cost men whose duties are to go around to the plants of members and advise them regarding a system suitable for their requirements, and to help them get the system started and working properly. These men are also available for advice at any time their services are wanted. This saves a manufacturer from being imposed upon by some impractical theorist in the cost finding business.

Step or Flush Pulleys?

A Reply to Hemlock Bill's Letter in the Last Issue —A Practical Woodworker's Viewpoint

In the December issue of the "Canadian Woodworker" an article entitled "Are Step or Flush Pulleys Preferable?" drew attention to the difference of opinion that exists on the loose pulley question. A woodworker, who signed himself "Hemlock Bill," ventured the opinion that the flush type of pulley is preferable, especially when provided with ball bearings. Another experienced woodworker has given the editor his experience in the matter, and his letter is quoted in full herewith as having an important bearing on the subject:—

Dear Editor:—

The letter by Hemlock Bill, which appeared in the December issue, raised a very interesting question. Based on my experience, my conviction is that having the tight and loose pulleys the same size and each slightly crowned, is preferable from the woodworker's point of view. This should be driven from a drive pulley turned perfectly flat. With two pulleys the same size and the machine or countershaft lined up properly with the main shaft, it is seldom that a belt exhibits any tendency to work from loose to tight or drive pulley.

Two other points that might well be discussed are the best type of bearing for the loose pulley, babbitt, bronze or ball bearing, and the most efficient way of lubricating it. The old, but none the less common, idea of an unprotected oil-hole in the hub of the loose pulley, is a joke as it is always full of shavings and dust. In addition to clogging the oil-hole, the dust works into the bearing and soon causes trouble. Surely the manufacturer of woodworking equipment can equip this machine with a type of loose pulley that will give fair service without constant attention.

Yours truly,
W. R. L.

In view of the interest which this subject has for practical woodworkers, it is hoped that a great many will avail themselves of the opportunity to express their opinions on the respective merits of step or flush pulleys so that data of practical value may become available.

New Ideas in Woodworking Machinery

The design of equipment for the woodworking plant is being greatly influenced by several factors which are operative as a result of a demand for greater economy, power and speed. This paper makes a thorough study of these new trends which give promise of important improvements in future designs.

By Seth Madsen*

Woodworking machinery, which has been considered standard for many years, is now passing through a period of revolutionary design. Among the many factors which are causing this change may be mentioned: (1 Adoption of high-speed steel and improved cutter-head design; (2) the demands for greater speed and more economical production; (3) the use of ball bearings for high speed arbors; and (4) the direct application of the electric drive, first to individual machines, and now to each individual head.

It is the purpose of this paper to show how these factors are greatly influencing and determining the type of woodworking machinery of the future. The machines considered, for the most part, will be those used in the sash, door and millwork industries, and these represent quite completely all the machinery used in the remanufacture of lumber into finished products.

Square Cutter Heads Being Supplanted

In the early days of the development of the woodworking industry only the very choicest lumber was used. Preferably softer woods and the straighter-grained materials went into articles requiring much shaping and fine finishes. With such materials the old-style square cutter head did remarkably well. Having a hook with an angle of 45 deg. it cut and planed well with a minimum of power required. The growing scarcity of softer wood resulted in the necessity of working up not only the harder woods, but the crooked-grained materials as well. Coupled with this came the demands for greater speed. The square head, though still used to some extent, had a tendency to tear, due to its great hook. The remedy was to back bevel or reduce the cutting angle of the bits. Two difficulties were encountered: carbon steel would not stand up, and the power required to drive the heads increased. The adoption of high-speed steel remedied the one difficulty, but did not reduce the power.

The improved work and absence of tearing resulting from more of a scraping cut has so influenced cutter-head design that now it is not unusual to find cutter heads with as little as 5 or 10 deg. rake instead of the original 45 deg. With cutters having so little angle the shavings are broken up and come off more curly. In some cases the power required may be reduced by setting the cutters at a sufficient angle to produce a side-shearing cut.

When it was found that high-speed would stand the scraping cut it became almost universal practice to apply more power and turn out more work. Milled-to-pattern bits and round heads with their high-speed bits were developed; as all of these could withstand greater centrifugal stress, higher speeds could be used in an endeavor to obtain more knife cuts.

The Limit of Belt Speed

Here again it was found that more power and more speed meant wider belts, larger pulleys, and excessive belt speeds. At somewhere around 4,000 r.p.m. we begin to experience more or less trouble in transmitting power to the cutter heads by means of belts. Centrifugal force tends to reduce both the grip of the belt and the arc of contact on the cutter-arbor pulley. The high belt speed tends to whip it to pieces and necessity for greater tension strains the belt. Heating up of the pulleys tends to increase belt slippage and further aggravates the trouble.

Whether influenced by these considerations or not, belt-driven machines have not generally been designed to operate at more than from 3,600 to 4,000 r.p.m. The use of two driving belts, one at each end of the cutter-head arbor, has enabled some machines to operate at the higher speeds.

Since designers were limited in the direction of increased cutter-head speeds, and since it is practically impossible to set two or more knives or bits to cut the same, it was necessary to find some means of securing a greater number of uniform-depth knife cuts per revolution of the cutter heads. Larger-diameter cutter heads were adopted and more bits inserted, but no matter how carefully set up, generally but one bit actually does the finish cutting and leaves "revolution marks" on the work. The axis of rotation of a cutter head at high or operating speed is never the same as at rest. Slight unbalance causes a corresponding "throw" at high speed, which may be sufficient to cause one bit to cut deeper than the rest. We may be able to make all bits cut, but seldom will they "finish" the same depth. A difference of 0,001 in. or less is very apparent on feeds greater than 1 in. for each 15 revolutions of the cutter head.

Motor Mounting

The problem of getting all bits to cut has practically been solved by jointing or dressing them to even length with a stone while the head runs at cutting speed. High-speed steel is much more satisfactory where jointing is necessary. If the "heel" produced by jointing varies too much on the successive bits or cutters the effect is as bad as though one were longer than the others. In spite of all these improvements there are still cutter heads that cannot be jointed and we must depend on higher rotative speeds.

Having summed up the various problems of

*Superintendent of plant equipment, Curtis Companies, Inc. Mem. Am. Soc. M.E.

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driving and fitting cutter heads, it is interesting to note how admirably ball bearings and electric motors overcome many of them. The belt drive, at its best, subjects the bearings to more or less pounding and vibration and also causes a tremendous amount of side pull and friction owing to belt tension. A motor direct-coupled to the arbor overcomes some of these objections, but still involves difficulties with couplings, alignment, etc., besides requiring considerable space.

A practice which is constantly growing in favor is to "build the motor in" so as to make the motor shaft and cutter arbor identical. While such an arrangement is ideal in providing high speeds, even, steady torque, and an abundance of power, it still involves some problems in bearing design. On this one point there is still no approach toward standard construction. Some machine builders mount the motor entirely outside the main arbor bearings, and let the rotor run on an overhung shaft with no bearings in the stator whatever. This construction works very well on lower speeds up to possibly 1,800 r.p.m., but its use is questionable on speeds of 3,600 r.p.m. and higher. Attempts have been made to improve this construction by use of an outer bearing in the motor, but best practice greatly favors the use of only two bearings on any high-speed arbor wherever possible.

Another method which appears to meet with more approval is to build the motor frames exceedingly strong, with heavy bearings and as great overall length as practical.

One machine builder has adopted a construction involving a heavy yoke with heavy bearings at each end and mounting the stator on the yoke. While this is an exceedingly heavy construction, it does remove nearly all mechanical stress from the motor frame itself.

Still another method of construction used by a prominent machine builder consists of mounting the yoke. The motor complete is located on the arbor between these bearings, and ball bearings in the end maintain clearance between rotor and stator.

These varied types of construction show that no definite belt plan has yet been decided upon. The essential problem is to provide for:

1—Rigid bearings without end play for the cutterhead arbor.

2—Bearings that will maintain, or are adjustable for, clearance between stator and rotor.

3—Bearings that will stand up at the higher speeds of 5,000 to 7,000 r.p.m.

Ball Bearings

In nearly all of the designs ball bearings are used and are meeting with very good results. Types of bearings vary from the double-row self-aligning type to the deep-groove single-row. The latter has the preference where end play is to be prevented, but the former is much preferred where radial load is predominant. It is quite important that end thrust be cared for at only one bearing, and that all other bearings be free to move longitudinally with the shaft as it may expand or contract. One manufacturer uses a well-lubricated bronze thrust bearing to resist end play in one direction, while one of the ball bearings meet it in the opposite direction.

In the usual construction the inner ball race is locked to the arbor while the outer race is free to creep or turn gradually. Bearing manufacturers claim this is desirable in order to distribute gradually the wear to different surfaces of the outer race. Instances are known, however, where this has gradually worn the retaining case to the point of objectionable looseness. Proper lubrications also seem to be a problem worthy of further study. Ordinarily hard-grease cups are used, but better, more nearly foolproof devices, are needed. Automatic circulating-oil lubrication seems most desirable for high speeds. Prevention of oil leakage into the motor windings is a difficult problem to solve successfully.

Life of Bearings

The life of ball bearings at high speed is something not yet well determined. It is generally agreed that they do not need replacing so often as babbitted bearings. Very few properly designed bearings fall short of what is considered satisfactory service. Owing to the comparatively short time ball bearings have been in use but few data are available concerning their service. It is reported that ball-bearing shapers built ten years ago are still, so far as is known, operating on the original bearings. It is known definitely that bearings running 7,200 r.p.m. are still in good condition after four years' service. Where bearings have failed after a few months' service it can generally be traced to faulty lubrication, improper design, or misuse.

Even with the possibility of an occasional bearing failure, there nevertheless seems to be a general feeling among users that it is far cheaper, both in time and money, to replace an occasional ball bearing than to replace babbitted bearings giving a like service. A prominent designer advances the belief that the average life of bearings operating at 3,000 to 7,200 r.p.m. will be about three years, and that at speeds slower than this they will last indefinitely. All manufacturers and users appear to be agreed that ball bearings are worth all they cost, owing to the many advantages they have over other types of bearings.

Power Savings

The savings in power resulting from the use of ball-bearing motor-driven arbors is little short of amazing. Tests of motorized and belt-driven molders in the Sellers factory, Elwood, Ind., show the following results:

	Belted Machine	Motorized Machine
Starting power	33 hp. for 1 min.	10 hp. for 4 sec.
Running idle	9.4 hp.	3.3 hp.
Feed, 45 ft. per min.	14 hp.[1]	6.7 hp.
Feed, 50 ft. per min.	14.7 hp.	7 hp. (est.)
Feed, 75 ft. per min.	17.4 hp.	9.1 hp. (est.)
Feed, 90 ft. per min.	18.8 hp. (est.)	10.7 hp.

[1]Data from the Wood Worker. Estimated values from curves drawn by the author.

Tests at the plant of Curtis Bros. & Co., Clinton, Iowa, on door stickers doing identical work are as follows:

	Belted Machine	Motorized Machine
Starting current	200 amp. max.	80 amp. max.
Running idle	17.3 hp.	5 hp.
Feed, 46 ft. per min.	23.5 hp.	8.1 hp.
Feed, 75 ft. per min.	25.8 hp.	10.4 hp.

Tests at the same plant on molders show:

	Belted Machine	Motorized Machine
Starting current	140 amp. 30 sec.	60 amp. 3. sec.
Running idle	8.1 hp.	3.8 hp.
Feed, 24 ft. per min.	10 hp.	5.5 hp.
Feed, 30 ft. per min.	10.2 hp.	5.8 hp.

Tests of this kind seem to indicate that we may

hope to save nearly 50 per cent. of the power now used for driving such machines as molders, stickers, planers, sanders, etc. This is cheering news in the face of the facts brought out earlier in this paper that the later types of heads designed to do better work do require more power to drive them. By this happy coincidence it may be possible for woodworking plants to keep their power requirements from continually mounting higher.

While it is encouraging to know that the total power requirements of a woodworking plant can be reduced by the substitution of ball-bearing motor-driven machinery, there nevertheless are other new problems that must be considered. In order to motorize a machine completely it is necessary to make the aggregate horsepower of all the individual motors much greater than the average power consumption of the machine. Each motor must be enough oversize to care for extreme or overload conditions. Oversize or underload motors operate at a lower factor. It is therefore necessary to provide either oversize generators or to install synchronous condensers. In a new layout perhaps the larger generator is preferable, while for equipment already installed the synchronous motor offers the best solution.

Budgeting for Business Control

"It is this spirit behind the budget," says E. W. McCullough, manager of the Fabricated Production Department of the Chamber of Commerce of the United States, "which, in the last analysis, will determine whether the forms and procedure of budgetary control shall have meaning and usefulness, or whether they shall mean but another addition to the administrative red tape now cluttering business.

Mr. McCullough deals with this phase of the subject in a bulletin which his department has just issued under the title, "Budgeting for Business Control."

"The first point in a reasonable financial program," says Mr. McCullough, "is to aim for that amount of business within one's resources to handle, which will give a fair return and which is founded upon a conservative view of the real demands of the consumer.

"The second is to strive to make the most of capital resources; establishing a production system; by refraining from plunging into expenditure for new plants and equipment where the old will serve the purpose; by placing collections on a reasonably prompt basis; by having purchases in line with production and sales programes, and by refusing to act as a free warehouseman.

"The third is to regulate current borrowings in such a way that they will be well under control. As the business of a firm expands, the gap between the order and payment date increases, bringing with it a growing need for banking accommodations. These banking requirements are usually granted, for the increase of business is a warrant of the success of the enterprise. New loans are made and old ones renewed and extended, until almost insidiously grows the conviction on the part of the manufacturer that the short term accommodations are a fixed contribution to the capital of his business, and he acts and works upon this assumption. Inevitably, the day comes when the bank finds itself pressed for funds and, in turn, calls on the manufacturer for payment, and since such a demand usually comes at a time of business depression, the manufacturer finds himself unable to liquidate. Then very likely reorganization ensues, resulting at best in the short term funds becoming, upon onerous terms, a part of the funded or long term obligations.

"For all lines, seasonal and non-seasonal, it should be clearly realized that short time obligations are not a permanent contribution to capital, and that manufacturers should hold themselves in readiness to liquidate when required, by at least maintaining a comfortable margin of cash and liquid accounts receivable over current indebtedness. Short term obligations should bear a definite relationship to the capital, or rather to those assets which are properly coverable by short term borrowing, and any unwarranted increase in this ratio should be regarded with alarm. The liquidation of debt ought to go hand in hand with the liquidation of inventories or accounts receivable, and it is a danger signal if a given debt should carry beyond the liquidation of the inventory or other transactions for which it was incurred. The practice of some bankers of requiring a sixty to ninety day liquidation from non-seasonal as well as seasonal lines is a conservative influence and has a salutary effect, even though this requirement may mean only a rotation of loans among other banks.

Ripping Sizes for Mouldings

The Southern Millwork Association has issued the following interesting bulletin on "Ripping Sizes for Mouldings:"

How much wood is necessary over the finished size for side heads or the width?

How much wood is necessary over the finished size for top and bottom heads, or the thickness?

These questions might appear insignificant or of little importance but if studied and figured out carefully it will be found that much waste and loss is going on in most of our factories and that this waste and loss cuts down profits.

4 lines of ¼-in. wood equals 1-in.
8 lines of ⅛-in wood equals 1-in.
16 lines of 1/16-in wood equals 1-in.
32 lines of 1/32-in. wood equals 1-in.

The loss of 12 one inch lines 12-in. long equals the loss of one foot B.M., and more if the lumber is thicker than one inch. And a foot of B & Better yellow pine is worth now about 5 cents. If we are wasting our lumber we are losing a nickle practically every minute or so and a dollar or two before we can go in the front door of the factory and out the back way.

Be careful in ripping your lumber for mouldings.

We have just completed a survey among our factories and find the majority are ripping their stock ¼-in. wider than finish size and only require ⅛-in. for the cuts in thickness, or in other words ⅛-in for each side head and 1/16-in for top head and the same for bottom head. One of our very largest factories reports that they require only 1/16-in. for each side head and another large factory gets away with 1/16-in. for inside side head and ⅛-in. for cut on outside side head.

Are you wasting your lumber and letting your profits go out in shavings?

Check up on your rip saw men and look over your moulders, perhaps you may need a new one. Keep your knives sharp, use modern machinery and save, save, save.

Training Foremen for the Millwork Plant

The foremen are really the backbone of the plant. As the chief link between the management and the workers, they occupy positions of such responsibility that only men well adapted for the requirements of the jobs should be so employed. This makes a course of training for foremen a very desirable feature of the plant activities. How one millwork firm developed such a course of instruction that was successful in every way was told recently at the convention of the Western Millwork and Woodworking Association by Wm. C. Hobart, general superintendent of the Wheeler-Osgood Co., Tacoma, Wash. His paper which follows is replete with bright ideas that, acted upon, will make foremen of superior abilities.

My only experience with foremanship training, in what might be called a training class, was at the Wheeler-Osgood Company's factory last March. A class of 16, under the direction of George Henry Jenson, state supervisor of Industrial Education, assisted by Charles M. Clark, employment manager for the Wheeler-Osgood Co., attended meetings which covered what might be called an elementary course on the subsect. Mr. Jenson and Mr. Clark are both men of the type that it is absolutely necessary to have in order to make a success of the training. If the right teacher is not in charge, there will be nothing gained by having the meetings. The meetings were all very interesting and I am confident that all who attended learned considerable by so doing.

This course of training has given me more ideas in regard to apprenticeship training and how to interest young men in our business than anything that has ever been done since I have been in charge of men. Foremen have become the key men of all industrial plants that employ men in large numbers, and to the employees they are the management, and the management of today must recognize that fact and see that the proper foremen are employed and instructed in the policy of the company in its relations to the employees. I can give you a better idea of the training course by reading the subjects assigned the different meetings and the conclusions at which we arrived.

The Duties of the Foreman

At the first meeting, the general idea of the conference was explained to the men:

It was the sense of the meeting that the foreman's duties were:

Supervisory.

Supervising men for production.
Supervising work as ordered.
Supervising methods as practiced.
Supervising equipment.

Managerial.

Manager of supplies.
Manager of team work.
Manager of men to make for better efficiency.
Manager of improved methods.
Manager of new and improved equipment.
Manager of new and improved safeguards.
Manager of improved sanitation, lighting, etc.

Instructional.

Training new men.
Training safe methods.
Training in new processes.
Training new assistants in foremanship.

Other responsibilities.

To know outside conditions and influences of the men.
To encourage better living conditions.
To promote high standards for the men.
Own standards above reproach.

Difference Between the Jobs of the Workmen and Foreman

The time of the second meeting was taken up in giving a clear conception of the foreman's job as distinguished from the workman's. It was agreed that the essential difference between the job of a foreman and a workman lies in the fact that a foreman "directs" while the workman "does." A foreman has bossing or directing responsibilities, while a workman has doing responsibilities, but shares to a certain degree of the foreman's responsibilities, such as planning, improving methods, training helpers and giving the foreman information in regard to the physical or home conditions of other men.

The conclusion arrived at was:

That certain admitted responsibilities of the foreman, such as physical condition of the men, responsibility for moral standards, encouragement of better living conditions, etc., do not come under the headings of either supervision or training, but require another division, which has been designated as "other responsibilities.

Methods of Analysis

The objectives of the third meeting were:

To bring out the idea of analysis and how it is carried on.

To "put over" the idea of a classified analysis.

To develop the necessity for a departmental analysis so as to visualize responsibilities.

To show each foreman how to begin analysis of his department.

The conclusions drawn up by the group were:

That the general method of analysis is of great service to any one charged with supervisory and managerial responsibilities. It is simply a scientific method of procedure and substitutes an exact or accurate procedure for the "guess method."

That by analysis we mean "taking account of stock;" that is, separating a thing into its parts of elements and making an inventory of its contents.

In most cases an analysis has more than one kind of information and unless it is classified it is not useful. This was brought out in the preceding meeting in the classification of the foreman's jobs into supervisory, managerial, instructional and other responsibilities.

That in order to be of real value, analysis must be

complete. This is particularly difficult in the case of a trained and experienced man who knows many things. He has learned how to do them automatically and unless he puts a great deal of application on the analysis he will overlook things that have become automatic. The analysis habit is a good one to acquire.

Visualizing Responsibilities

The objectives of the fourth meeting were:

To increase ability to continue departmental analysis.

To increase ability to visualize responsibilities.

To attempt to fix (approximately) the supervisory value of the operations in certain jobs.

The conclusions were:

That in making an analysis of responsibilities, certain points are brought out that may have been supervised unconsciously. This accounts for the fact that certain points may receive too much supervision while certain other points suffer from a lack of supervision.

That a check list helps to visualize the different supervisory responsibilities. One's capacity for analysis or ability to visualize increases with practice.

That in charting the supervisory responsibilities it can more accurately be carried out by first charting the supervisory ratio of the different jobs. In this case the job of stickerman was charted and an approximate rating to each one on a scale of 1 to 10. The No. 7 point represents in the opinion of the foreman an operation which requires only incidental supervision, while an operation that was rated as No. 10 is one that requires almost constant supervision. The numbers between 1 and 10 are used to indicate varying degrees of supervision.

That it is difficult to check off responsibility points or to work out a supervisory ratio the first time it is attempted. This of itself in no way indicates poor supervision but emphasizes the fact that the foreman has not always been in the habit of visualizing his job or thinking of it analytically.

Carelessness on the Job

The objectives of the fifth meeting were.

To analyze the human factor of carelessness on the job.

To apply the analysis of carelessness on the job to typical cases.

Conclusions by group:

That in dealing with carelessness on the job in this case it is being treated from the standpoint of analyzing carelessness and not as a safety supervision point.

That in general there are two methods that are followed in dealing with carelessness on the job. (1) To take steps to remove the cause after the act of carelessness has taken place, which may have resulted in personal injury, property or equipment loss, slowing up production, etc. (2) To anticipate, wherever possible, and take steps to prevent the act of carelessness. This, of course, requires careful analysis and is a managerial responsibility which is agreed as inseparable from a good foreman's job.

That carelessness is a human factor and for this reason can probably never be cut out entirely However, that by careful analysis and supervision can be reduced to a minimum; that when the act of carelessness takes place it is to be analyzed and classified and the cause removed, and should be dealt with in connection with the cost to the department and the plant.

Dealing With Careless Men

The objectives of the sixth meeting were:

To continue use of the chart on carelessness on the job to outline methods of dealing with carelessness on the job.

To have each foreman chart his supervisory operating points and determine the amount of supervision required on each point.

Conclusions by group:

That in order to deal wisely with men responsible for carelessness on the job the following were decided by the group to be most helpful in the order as listed:

Be sure that a man understands instructions.

Be sure that instruction is complete.

Get man to appreciate need for following instruction.

Supervision of new men in beginning until you are sure that he is careful.

Making it possible for the man to be careful.

Proper division of supervision (emphasize points where most needed).

Calling men down.

Take man off job.

(a) Transfer.

(b) Discharge.

(c) Temporary lay off.

That it is common for a foreman to cover operating points by the "guess method."—that is, he covers his supervisory points by giving as much attention each day or week as will keep the thing going. He assumes that if a particular operation is closely watched the results will be O. K. From the standpoint of efficiency the disadvantage of this method is that the foreman has no guarantee that all of his supervisory points have been completely covered or that his supervision is distributed to the best advantage. He follows his past experience and general notions. It was agreed that the analysis method will assist in discovering operating points that have had too much supervision and bring more supervision to points that have been slighted.

It was also pointed out that the first time that a foreman analyses his supervisory operating points that the results will probably not be satisfactory but will require additional study from time to time before a chart can be made that is satisfactory to himself.

Mental Attitude of the Worker

The objectives of the seventh meeting were:

To emphasize the fact that mental attitude of the workman force is an important cost factor.

To determine the foreman's responsibility for morale.

To deal with certain interest factors that a foreman may use to keep up morale, approached from the managerial standpoint.

Conclusions by group:

That the general mental attitude or morale of the working force, as it is often called, is more difficult to deal with than the responsibility that we have been analyzing. When we are dealing with morale we are attempting to work with something that goes on in the minds of other people. It calls for our very best judgment as to what to do and how to do it, and we must continually keep in mind that no two cases

will be exactly alike, so that one particular procedure will not apply to many cases.

It is generally admitted, however, that some people have been more successful than others in dealing with morale and that doubtless by studying their methods we are able to help solve our own problems of morale. In general, this mental attitude may be approached from three points,—that of interest, leadership and satisfaction.

That in general we say that interest means anything that causes a desire to do a good job regardless of what the job may be. Labor loss and quantity of production depend largely on the interest of the individual members of the working force. This is true for all departments, and a good foreman recognizes his responsibilities for noting the interest or lack of interest in his group, and when the interest is poor take steps to remove it.

A partial list of the cost elements in connection with interest are: Low production due to loafing, labor loss, low quality, unnecessary accidents, lack of co-operation, etc.

That in order to deal effectively with the managerial problems of interest it is necessary that we should analyze the causes of interest. This is one of the most difficult managerial jobs that a foreman is up against, and the degree to which he can successfully deal with these problems depends not only on his knowing the definite factors and their value, but he must be able to use the right interest factor with a given set of conditions. Different interest factors may be required with the same individual under different conditions.

Interest factors admitted as being useful are as follows:

Ambition—Ambition to gratify a definite aim is the strongest interest factor known to executives and managers.

Self-Respect—This is a much stronger interest factor than is generally supposed.

Job Pride—The appeal to the job pride, if properly made, results in interest in the job.

Plant Pride—Like job pride, only more so.

Curiosity—Generally has value only when a man first comes into a plant or goes on to new work.

Fear—Probably used more than any other, but least effective of all interest factors.

Use of Co-operation

The objectives of the eighth meeting were:

To further emphasize the fact that mental attitude of the working force is an important cost factor.

To emphasize the foreman's responsibility in connection with co-operation and leadership.

To study co-operation and determine how to use it.

Conclusions by groups:

That co-operation consists of helping some one else and means working together. In general, it may be stated that co-operation means going outside of the strict line of duty to help somebody else for the general good of the entire group.

Under these conditions it is evident that certain definite relations are set up between superior and assistant or subordinate. The superior must "set the pace" and set up conditions that make co-operation possible. These types of superior were developed:

A. The type of superior depending absolutely on discipline and routine practice. This type is illustrated by the German military organization and is not conductive to co-operation.

B. The "It" type, which results in a superior who is loaded with detail and whose subordinates instead of co-operating fully, have a tendency to load all the jobs that they can onto the superior.

C. The "Us" type, which sets up a condition making possible effective co-operation.

The conditions resulting from the attitude of the superior so far as the men or subordinates are concerned in the classifications preceding are as follows:

A. With this type the individual will think only of protecting himself by orders regardless of the result.

B. With this type the individual will continually run to the superior for all decisions and take no initiative whatever.

C. With this type a normal individual will not be afraid to co-operate and should result in good co-operation.

That in discussing the co-operation on the part of the subordinate two cases or types were developed.

A. Where the subordinate is asked to co-operate by his superior. In this case the subordinate co-operates in proportion as he gives the best that is in him.

B. Where the subordinate co-operates without being asked. This is, of course, more difficult than in case "a," since the subordinate co-operates effectively, in proportion only as he sees a chance to co-operate and uses good judgment.

The two chief difficulties, of course, are, first, that he may not see a chance to co-operate, and secondly, that the subordinate's judgment may not be good and result in a mistake. It takes a rather big type of foreman to accept this first mistake as a part of the process of having the individual to co-operate on his own initiative.

Some of the outstanding chances for co-operation are as follows:—

a. Being a part of the organization.
b. Backing up the superior.
c. Avoiding unconscious knocking.
d. Supporting policies that come from the superior.
e. Transmitting orders intelligently.

That in the opinion of the group the co-operation of foremen with each other is most important, that while co-operation between a foreman and the men in his department is very essential, the co-operation between departments, that is between the different foremen, is still more important. When this point was first brought up certain foremen felt that the co-operation with their own department men was the more important one of the two, but discussion disclosed the fact that from a managerial standpoint that of the foremen with each other is the more important.

That leadership which was discussed in connection with co-operation is difficult to define, but a good leader can plan ahead, can get the right men to work for him and keep them, and has good team work.

Accidents and Disease

The objectives of the ninth meeting were:—

To apply analysis to causes of "accidents" and work out proposals to prevent repetition of injury.

To bring out the responsibilities of a foreman as

to the physical condition of the members of his working force.

Conclusions by group.—

That for the purpose of this conference an accident is classed as an injury that could not have been prevented by any reasonable exercise of human forethought and management.

That in dealing with the physical condition of the force, acute disease, chronic disease, injury and general poor condition should be considered as well as accidents.

Orders and how to Carry Them out

The objectives of the tenth meeting were:—

To bring out the managerial value of orders, directions, and suggestions.

To show that there is an instructing process.

Conclusions by group:—

It is agreed that a complete order should cover the following:—

a. What the job is.
b. Who is to do the job.
c. Where the job is to be done.
d. When the job is to be done.

It was also brought out that how to do the job came in connection with order, but after discussion it was decided that it should not be made a part of the complete order because **how** was thought of in connection with training and that so far as possible the man should be trained before he is given orders. When to give orders, when to give directions, or when to make suggestions, was discussed in considerable detail.

That an order is essentially a military term, and (a)—sets up clearly the distinction between superior and subordinate; (b)—relieves the subordinate of responsibility other than carrying out the order; (c)—keeps all final responsibility in the hands of the superior, and when a wrong order has been given, but intelligently obeyed, resulting in damage, the superior and not the subordinate is to blame.

That directions are usually given in a civilian term. Directions, as distinguished from orders, do not so specifically emphasize the distinction between superior and subordinate; it is assumed that the subordinate exercises some discretion in doing the job; most of the responsibility is still left with the superior but does put some responsibility on the subordinate as to how the minor details are to be carried out.

That suggestions carry an entirely different meaning from orders and directions. A suggestion is made with the idea of helping out, but the person to whom the suggestion is made may or may not follow it—it does not set up a distinct relation between superior and subordinate; it puts the responsibility on the subordinate; the superior does not assume the responsibility in making a suggestion.

That a foreman in exercising his managerial ability must use discretion as to which of the three methods he should use under a given situation with a given individual. No set rule can be formulated but as a general proposition directions and orders are often used when better results might be obtained through suggestions in appealing to job pride, self-pride and other interest factors. Direct order should be used as little as possible.

That in connection with the training of green learners or training a man partially skilled on new operations, there is such a thing as an instructing process; that the fact that the foreman or instructor himself knows how to do the job, is not necessarily a guarantee that he is able to effectively train others to do the same thing. That in the demonstration given it was brought out that there are at least four distinct methods that are used in connection with training. These are demonstration, illustration, lecture and experiment.

That in training, the instructor must not only be sure that he has put over what he wants the learner to learn, but that he must be sure that the learner has gotten it. In other words, before the process is complete, the learner must be able to do it without any assistance. That in order to do a good job of instructing on a given operation or process that the instructor must first make a training layout of the job that he is going to put over.

That a good workman is not necessarily a good instructor but that in order to be a good instructor a man must be a good workman.

That when we are training men we must take into consideration the proper teaching conditions for putting over a lesson to the learner and that a common mistake in training is that the instructor attempts to put over too much in a given lesson.

The Teaching Process

The objectives of the eleventh meeting were:—

To develop the fact that a good instructor will analyze and classify what is to be taught.

To develop the four steps in the teaching process.

Conclusions by group:—

That a complete analysis and classification of everything that is to be taught on a particular job is necessary in order to be able to do a good job of instructing.

That an instructor, like a workman, is required to use tools in putting over his instruction. These tools, are commonly known as "Methods of Instruction," brought out in the preceding meeting, and are used in connection with the job of instructor. It was developed that in the instructing process four operations are always used. These are, preparing the man to receive the instruction; presentation or putting over of instruction; applying the instruction to the job to be done—that is, having the learner try to do it; testing or examining the man to make sure that he can do the job properly without any assistance.

During the meetings a good many questions were brought up for discussion and all were thoroughly analyzed. The question as to characteristics of a good foreman was answered by one of the class in the following manner:—

Even temperament; good judgment, sympathetic but firm. Understand men and be able to place them in position for which they are best fitted physically as well as mentally. Absolutely honest in his dealings with them and also with the company. He must practice as much as possible "Do unto others as he would like to be done by."

Basswood is an ideal wood for trunks because it is light in weight, does not split readily, holds nails well, is easily worked, keeps its shape well, and is available in wide, clear pieces. Some trunk manufacturers use basswood exclusively for the trunk box and also for the lid and trays. The trunk box may be made up of a single thickness of basswood or the sides may be 3 or 5 ply.

The Problems of Lumber Dry Kilns

What Artifical Drying is Intended to Accomplish and the Equipment that Will Give the Best Results—Factors that Retard Drying and Hamper Kiln Output

By Thomas D. Perry*

The problem presented to the manufacturer who would utilize woods intelligently is a diversified one owing to the fact that the score or more of major varieties of commercial timbers are grown in climates and seasons differing widely in temperatures and moisture, and on varying types of soils. The origin of the lumber has a noticeable effect on its water content. Lumber or veneer (thin lumber produced usually by rotary cutting or flat slicing, sometimes by sawing), when produced from the log, contains a large proportion of water, ranging from 25 to 75 per cent of the total weight. One square foot (board measure, one inch thick) of gum lumber, weighing approximately five pounds when sawed, will be reduced to about three pounds when its water content of approximately one quart has been evaporated. Oak grown on a hillside may contain only a pint (approximately one pound) and swamp gum may have from three to five pints of water per square foot board measure.

This water content of wood exists in two forms, free moisture and cell moisture, the former being readily evaporated in ordinary air drying, and the latter demanding excessive air drying (several years) or artificial treatment in kilns. The usual border line between the two forms of moisture is in the vicinity of 30 per cent moisture content (the percentage of weight of water removed being computed on the dry fibre weight as a base). It is possible to use artificial means to remove this free moisture, but simple air exposure is usually more economical.

By far the largest volume of lumber products are dried in the form of lumber or veneer. The drying of unusual forms and shapes, such as staves, handles, shingles, laths, etc., is decidedly specialized and outside the range of this discussion.

Types of Kilns

The original artificial drier was a smoke kiln, now practically obsolete. This was followed by the furnace kiln and the steam-coil kiln. Some woodworkers still persist in using home-made equipment, but kiln design and building has become a special branch of manufacturing that has its own recognized field.

The three main divisions into which lumber kilns may be grouped, as illustrated in Fig. 1, are:

1 Blower—Mechanically forced ventilation, or recirculation, whether suction or plenum method; moisture-laden air usually discharged out of doors.

2 Condenser—Generally of the gravity recirculating type. in which the air passes over moisture-removal or condensing units, once in each interchange.

3 Ventilated—Fresh air taken and used air discharged direct from kiln to atmosphere, utilizing the fundamental laws of physics to obtain internal circulation.

To understand the particular range of each of the foregoing types it is necessary to outline the moisture-removal problem in some detail from the standpoint of the lumber to be dried. Air drying removes more moisture from the surface than from the centre, and owing to the length and width of a board, drying takes place chiefly through the flat faces, rather than through ends or edges. The inevitable result is a surface drier than the interior, and air-dried stock is therefore subject to an internal strain that often manifests itself in the form of warp, twist or other surface irregularities. The problem is to draw the centre moisture out and have surface and interior equally dry.

The skill of an engineer is not required to discover that, if the drying of wood afforded no organic difficulties, the blower would dry rapidly, utilizing considerable power, and the condenser would function slowly but at low cost.

The ventilated kiln is the least understood, even though most generally used, and offers an unusual opportunity for speed and efficiency when its underlying principles are grasped.

Overcoming Internal Strain

The nature of wood is the phase of the problem that engineers least appreciate. It is almost axiomatic that wood should not be subject to external or

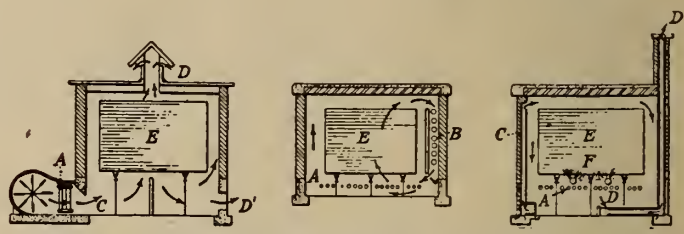

Fig. 1—Showing (from left to right) blower, condenser and ventilated kilns. A, heating unit; B, condensing unit; C, fresh air unit; D and D', used air outlets; E, Lumber charge and F, humidfying unit)

internal strain during drying, but it is practically impossible to obtain such a "strainless" condition. The reduction of this drying strain to a minimum point is necessary to drying without damage to the thickness of the wood to be dried: e. g., one sixteenth-inch veneer is practically all surface and can develop little internal strain in any kind of drying, while four-inch green oak presents a decidedly stubborn drying problem, and taxes the skill of the best operator in an efficiently controlled kiln.

These facts lead to the logical conclusion that where thickness is nominal, as in the case of veneer, applied shellac, stain, filler, varnish and glue, the speed of the air movement in a blower kiln will remove moisture rapidly and cause no serious damage; but where thickness becomes appreciable (one-half inch and up) the rapidly moving atmosphere of a blower kiln will produce uneven drying and unnecessary interstrain that will inevitably damage the lumber. Even with attempted maintenance of high humidities (difficult in blower kilns) the hazard is serious. On the other hand, the slowness of the condensing kiln will make for accurate control, but the lack of speed may force the initial cost of installation to an excessive amount. As a matter of fact, govern-

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ment experts have frequently recommended the condensing kilns without comprehending in most cases the economic aspect. It has been the author's experience during the last five years that kilns of the condensing type used for war work did no better drying than the best of the ventilated types, and required for an equivalent output practically twice as many units, at approximately double the initial cost per unit, or a quadruple investment, with no appreciable gain in quality or safety.

As a conclusion it may be noted that blower kilns are most suitable where thickness is not a factor, and that condenser kilns are especially serviceable in the drying of thick green woods where internal strain is a decided danger.

Typical Drying Cycle

Before considering the individual characteristics of the various types of ventilated kilns, it may be

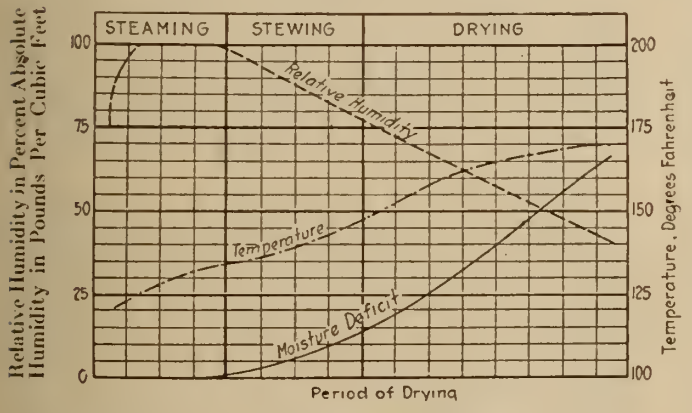


Fig. 2—Temperature and relative humidity during drying cycle and curve showing moisture deficit

well to outline briefly a drying cycle. Take an actual operation schedule, tested by practice, of reducing one-inch oak from 35 to 5 per cent moisture content in sixteen days of twenty-four hours steam. Plotting this schedule, curves showing the variations in temperature and the relative humidity during the period of drying are obtained as shown in Figure 2. The drying cycle divides itself into three phases: initial "steaming" or high-humidity period in which lumber is heated through and enough moisture added to make the surface as wet as the centre; intermediate "stewing" (a rather unexact term) or cooking, a transition period; and the final "drying," when humidity may be dropped and temperature raised within limits demanded by the kind and condition of lumber.

The temperature should gradually raise from 125 to 170 degrees Fahrenheit and care should be exercised that it does not go up too fast during the initial steaming, which would tend to crust the outside of the boards. The relative humidity line reaches 100 per cent as rapidly as possible without producing an excess of temperature. The reason for the high initial humidity is that partly dried lumber, as placed in the kiln for drying, normally has a surafce drier than the interior, and unless the surface is thoroughly moistened the internal moisture will be sealed in by the dry and shrunken surface layers; in other words, the degree of internal strain will be intensified rather than reduced. If the surface of the board is steamed or exposed to an atmosphere or high humidity it will absorb moisture and expand, making it possible for the cellular structure to conduct additional moisture to the surface and reducing the internal strain. Heating the lumber through is also accomplished quickly and safely by this steaming.

Moisture will pass out more rapidly from the surface of a board the centre and surface of which are approximately equal in moisture content, and the final result of the drying cycle will be a reasonably uniform moisture content from face to face of the board and an absence of internal strain, with consequent damage. It is a rather significant fact that lumber dried by the so-called "wet" process explained in the preceding paragraph is more plump than when treated by the old-fashioned method of "giving it all the heat it will stand" without preliminary steaming or due regard to humidity. Experiments have proved that the endeavor to dry without steaming takes longer because moisture transfuses more slowly through a dry than a wet surface, and the resulting damage is usually serious.

Moisture Deficit is Measure of Drying Power

Another way of expressing the function of humidity is to express the cycle of drying from the standpoint of absolute humidity, or the grains of water vapor per cubic foot of atmospheric kiln content.

If we could isolate and examine a cubic foot of space (containing air and water vapor) in a kiln at a temperature of 150 degrees Fahrenheit and a relative humidity of 50 per cent, we would find that it contains 36.76 grains of water in the form of vapor and possesses the capacity, before reaching saturation, of absorbing an equal additional amount of water vapor. It is the difference between actual grainage and the grainage of saturated water-vapor content that controls the drying power of the kiln. Stated in another way, this means that a cubic foot partly saturated has a tendency to beome entirely satured if free moisture is accessible, i.e., from the lumber.

This moisture deficit may be termed the measure of drying power in a kiln (when considered in connection with the temperature and circulation), and the greater the deficit the greater will be the pull exerted on the moisture contained in the lumber. At the beginning of the drying operation, when reducing the lumber to a uniform wetness, the moisture deficit is nil; and towards the end of the operation at a temperature of 170 degrees Fahrenheit and a re-

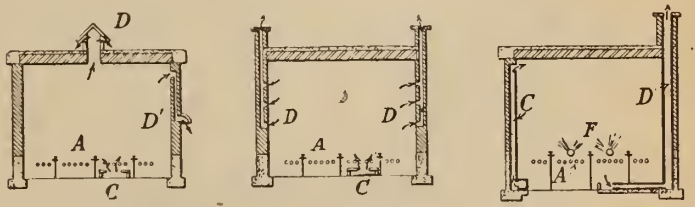


Fig. 3—Classes of ventilated kilns—ventilated at top, side and bottom. A. Heating unit; C. Fresh air inlet; D and D. Used air outlets; F. Humidifying unit

lative humidity of 40 per cent, each cubic foot is eagerly seeking for 67 grains of water vapor or such part of it as can be extracted from the lumber. Figure 2 contains a curve showing the moisture deficit expressed in grains per cubic foot. It will be noted that this line curves up more rapidly than the temperature line. This deficit may be termed the measure of potential drying power. It is easy to remove moisture from the lumber at first, but the last few stages or drying require a decidedly strong pull.

While it would be possible to reduce the relative humidity to below 40 per cent (carrying the mois-

ture deficit above 67 grains), it would result in too rapid a rate of surface drying and leave an unevenly dried product. The secret of controlling temperature and humidity in efficient drying is to avoid any sudden changes during the progress of the operation and to finish without carrying the temperature to an extreme that will damage the wood; and to avoid reducing the relative humidity at any point where it will dry the surface faster than the centre.

The Number of Air Interchanges

The number of air interchanges per hour should not be too great. If an anemometer test shows three or four complete air changes per hour, it is enough. The process of the withdrawal of water vapor from the interstices of the lumber cannot be very rapid. Too rapid air movement in a gravity kiln subjects it

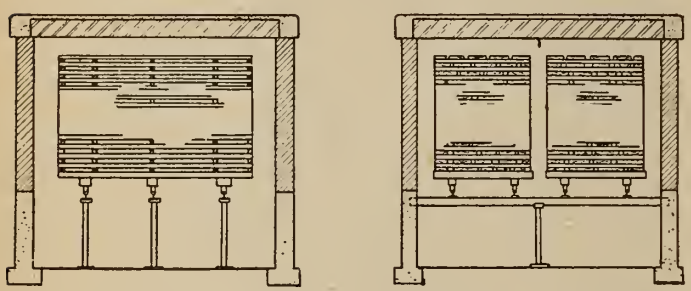


Fig. 4—Transverse section of a kiln, showing cross-pile (at left) and end pile (at right)

to the same criticism as a blower kiln, i.e., too rapid surface drying.

High humidity and large circulation of air are antithetical to one another. To obtain high humidity the circulation must be either stopped altogether or greatly reduced, and to reduce the humidity a greater circulation must be induced by increasing the draft.

The following example, based on three interchanges per hour, illustrates this point:

Size of kiln inside, 15 feet by 19 feet wide by 26 feet long.

Cubic contents, gross, 7,410 cubic feet.

Lumber allowance, 1,083 cubic feet (13,000 feet board measure).

Equipment allowance, 50 cubic feet.

Cubic contents, net, 6,277 cubic feet.

Allowing a moisture-lifting capacity averaging 25 grains of water vapor per cubic foot of each discharge from the kiln:

Discharge per cubic foot, 25 grains or 0.00357 pounds avoirdupois.

Total single discharge, 0.00357 × 6,277= 22.42 pounds.

Hourly discharge (3), 67.26 pounds.

Daily discharge (72), 1,614.25 pounds.

Estimating the average water content of saturated oak lumber at one pound per foot board measure:

Lumber allowance, 13,000 feet board measure.

Moisture to be removed, 13,000 pounds.

Time required, 13,000 × 1,614=8.05 days.

This would indicate that the actual drying period (Figure 2) will require practically eight days if the texture of the lumber permits of an average removal of 25 grains. An additional time allowance should be made for steaming.

The removal of two pounds moisture per foot from green gum, for instance, would necessitate either increasing the drying time proportionately, or operating at a higher temperature.

Theoretically it may be possible to reduce lumber to absolute dryness, but it cannot be kept so except in sealed receptacles. Under ordinary workroom conditions it will reabsorb to 6 or 8 per cent moisture. It is necessary, therefore, only to dry down below normal and allow for reabsorption. In ordinary lumber yards the lumber will rarely air-dry below 15 per cent, and kiln-dried stock left out of doors will absorb to about the same point. For structural purposes, exposed to weather, the moisture content of timbers should be around 15 per cent to prevent shrinkage or expansion. For more accurate work the equilibrium point should be ascertained for each plant and will be found for interior trim to be about 8 to 10 per cent, and for furniture, pianos, etc., from 4 to 7 per cent.

Ventilated Kilns

Ventilated kilns are readily grouped into three classes as indicated in Figure 3.

Kilns of the first class are ventilated at the top, either through the ceiling and a cupola couple on the roof, or through openings in the side walls near the ceiling. Fresh air is usually admitted near the floor and the air movement must be distinctly upward. The real problem is to obtain an efficient utilization of this air movement to lift moisture out and up from the lumber.

No difficulty will be encountered in securing ample air discharge, as hot air will always rise and seek an exit. It is obvious that the hot air escaping will not be heavily charged with moisture. Only to a limited extent is it possible to use this upward moving vehicle, because the increased water absorption capacity accompanying higher temperature will carry only a small amount of water vapor without a net increase in weight.

As an example, suppose the temperature of the air in the lower part of the kiln is 140 degrees Fahrenheit and at the top 160 degrees Fahrenheit; dry-air weighs, 463.09 and 448.11 grains per cubic foot, respectively, a difference of 14.98 grains (less than 20 per cent relative humidity at 160 degrees). Air,

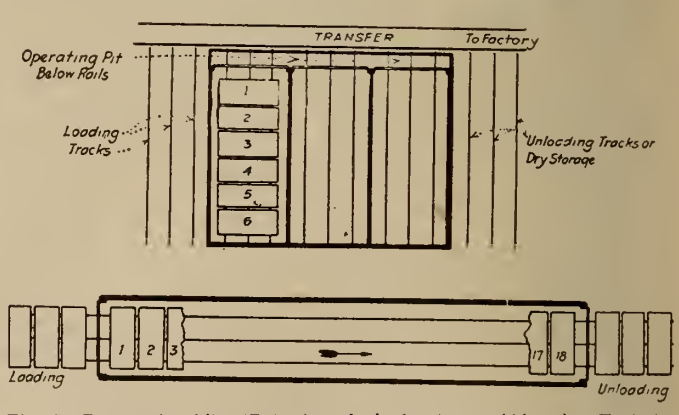


Fig. 5—Progressive kiln (Below) and single charge (Above). Each has equal holding capacity and output, together with minimum necessary trackage for loading and unloading

therefore, cannot move upward and carry as much as 15 grains (neglecting expansion which is less than 4 per cent). Compare this with the fact that in a down-draft kiln the air at 140 degrees can carry 56 grains per cubic foot before reaching saturation.

The use of steam spray is not practical in this type as conditions of high humidity or steam saturation produce a relatively heavy atmosphere that cannot be satisfactorily handled with upward air currents.

The second class have air exits at the sides and

air inlets usually at the bottom. There is less of a scientific basis for this type than for either the first or the third type. There is great danger of "short-circuiting" the air across a corner of the kiln, thus causing pockets in places where a lack of air movement prevents drying. When this type is applied to the primary drying (to reduce shipping weight) at sawmills, with high temperatures, it may give fair results in regard to the removal of free moisture, and perhaps will reduce the moisture content to 15 per cent, but below this point is undependable.

The use of steam spray or the handling of relatively heavy moisture-laden atmosphere is no more possible than in the first type. Neither of these types are adapted to what might be termed final drying for musical instruments, furniture, high grade cabinet work, interior trim, or any object where permanence of dimension and a high degree of finish are required.

Reversed Ventilation

The third type, which is often called "reversed" ventilation, has a downward circulation with outlets at the bottom. The fresh air inlets are at or near the ceiling line and the damp air exits in the pit below the lumber. This method adapts itself most effectively to the handling of heavy moisture-laden air shown to be necessary to dry the lumber uniformly. Whenever any portion of the atmosphere of the kiln acquires a substantial amount of moisture, it will lose temperature, increase in weight, and settle. It is therefore necessary to provide an adequate damp air accumulation pit below the lumber, and to supply chimneys or stacks with sufficient draft to carry this moisture-laden air up and out. Heavy air that has settled into a pit will not readily be drawn up a stack. Steam-heated pipes in the stacks will accomplish this and at the same time keep the water vapor from condensing on the interior of stacks or at their top outlets. This type gives opportunity for excellent control, as any humidity can be handled and the air discharge be under positive control under various climatic conditions. For high grade work it affords reliable regulation of the three essentials; temperature, humidity and circulation.

It has been the purpose of this paper to outline some of the fundamental principles in lumber drying and to indicate their most important applications. Many of the combinations of mechanical apparatus are adequately covered by patents, although the fundamental elements have been in use too long to have protection.

Standards of Construction

A few standards of construction, design and operating methods are included to assist in general layouts and development sketches.

Kilns may be end-pile or cross-pile, i.e., boards may be parallel or at right angles to the rails, depending largely on the factory and yard arrangements. End-pile gives slightly better internal circulation, although this is rarely determinative.

A kiln car of lumber is usually six feet wide, nine feet high (above rails including trucks) and from twelve to sixteen feet long (rarely longer). Higher loads do not only upset easily, but greater heights introduce uneven drying, or wet pockets, because of unavoidable temperature differences between the bottom and top of an enclosed space. The writer knows of a battery of kilns twenty feet high in which the top half of the load always dried first and there was a temptation to discharge the kiln before the bottom half dried.

Kilns may be of the progressive (open at both ends) or single charge (usually open at one end) type. The former involves a daily opening to remove and enter lumber, a daily moving forward of every car, with a consequent loss of from 5 to 10 per cent of the drying period from the opening of the kiln, during the time required to cool sufficiently to move the cars, to the time when temperature and humidity are restored to operative conditions. The progressive kiln, to be efficient, requires that the charging end be maintained at a low temperature and a high humidity and the discharging end at a high temperature and low humidity with graduated intermediated conditions. Air circulation, chiefly transverse, prevents dependable graduated conditions and the operator copes with irregular conditions. The subdivision of the heat and humidity sources may be of slight help, but in any case the progressive kiln is more complicated than the single-charge type.

The latter type (sometimes called box, compartment, pocket, or cell) requires the operator to vary his entire kiln regulation from day to day according to a predetermined schedule. The room is small enough so that control of uniform conditions throughout is simple. Various kinds and thicknesses of lumber can be separated in different rooms and given individual treatment. Valves and dampers can be located in an accessible outside pit. When built in batteries with adequate transfer and yard trackage the single-charge type will produce as great a turnover from the investment as the progressive, and dry the lumber better.

Hollow tile, with an exterior brick veneer, makes the best walls, and a tile and reinforced concrete roof, with insulated wooden doors, will complete an economical heat-retaining building. Solid concrete is not only a poor insulator, but absorbs too much moisture and checks badly under high temperatures. Frame buildings, under the varying conditions of temperature and humidity, rot and crack rapidly.

The output of many kilns is seriously hampered by lack of foresight in providing adequate loading tracks, transfer arrangements, dry storage rooms and unloading facilities. Kilns will produce their full capacity only when there are no delays in charging and discharging.

Although this paper is too limited to include descriptions of detailed operating schedules, recording and regulating instruments, or methods of testing and tabulating results, it may be stated that any type of kiln gives its best results to the intelligent operator who is methodical and careful in his adjustments, and who keeps such comprehensive records as to prevent making the same mistake twice.

Scientific kiln drying is only at its beginning and wood users have but commenced to visualize the efficiency and economy that is possible. Engineers can do much toward the solution of the problem by giving it the same degree of study and research that has resulted in substantial progress in other fields.

Basswood is the favorite wood for candy pails, because it gives an appearance of cleanliness. For the same reason it is used for jelly pails, called "jelly kits," which are used for the shipment of jelly in bulk. Most liquids will seep through basswood, but jelly hardens in the wood and prevents the liquid from coming through.

Basswood Has Desirable Qualities for Boxes

A Bulletin of the U.S. Department of Agriculture Outlines the Suitability of Basswood for Box and Crate Manufacture and Stipulates the Grades that are of most Service

Woods suitable for the construction of boxes and crates are divided, on the basis of their physical and mechanical properties, into four groups. Basswood falls into the first group, including the lighter woods, which vary in average weights when thoroughly air-dry from 21 to 35 pounds per cubic foot, are soft and easily worked, hold nails moderately well, and do not readily split in nailing. Both softwoods and hardwoods are represented in this group.

Basswood is very desirable for certain kinds of boxes on account of its light weight, white color, and freedom from odor. Its good working qualities, freedom from excessive warping and splitting, as compared with other light-weight woods, and good nailing qualities also help to make it valuable box material. For boxes in which heavy merchandise must be shipped or which must stand much rough handling, such as boxes for export shipment, stronger and therefore heavier woods are demanded.

For boxes made to hold foodstuffs, such as crackers, chocolate, and candy, basswood is the ideal wood. In such boxes the contents are often in direct contact with the wood, and no odor or taste is imparted by basswood. Basswood is also used for shipping other kinds of provisions, such as dressed poultry and butter, because of its odorless quality. Boxes for this purpose are sometimes made from cheaper resinous woods and paraffined on the inside, but this process is expensive. Yellow popular is used for such boxes, also cottonwood and tupelo, although the last two woods are much inclined to warp.

It is a common practice for manufacturers to make the shipping box serve as an advertisement for their products. Basswood makes an attractive box, and stenciling or printing shows to good advantage on the wood. White pine is the old reliable box wood, but it splits more readily than basswood. Boxes for holding bottles, particularly those containing soft drinks, are often made of basswood, because holes can be bored very close together in the same piece without splitting, and it holds its shape well even when alternately wet and dry.

Basswood has the disadvantage however, of discoloring, and of molding and decaying readily in damp situations, and this makes it unsatisfactory for many kinds of boxes. If left in contact with the ground, especially if the ground is wet, basswood will soon decay. For shipments which are likely to be subjected to considerable moisture, therefore, including bottled and canned goods, basswood is not altogether suitable.

Other Wood Preferred

Basswood is not used in as large quantities for boxes as several other woods, because of its comparative scarcity and high price. White pine and yellow pine are the main box woods. Yellow poplar, cottonwood, and several other woods are used in larger quantities for boxes than basswood, because the supply of the latter wood is much less and the price generally higher. It is not usually made into large packing boxes, but its use is largely confined to small, special boxes where the desirable qualities of the wood can be made to serve to best advantage. In basswood, the lower grades, which in other species make up the bulk of the box material, are unfortunately not suited to the manufacture of some of the main kinds of boxes for which it is valued, because of defects, such as dark and decayed streaks, which are usually present in the low-grade stock. Box makers, therefore, generally prefer to use other woods, such as yellow poplar, cottonwood, aspen, sap gum, and tupelo.

Box factories prefer the No. 1 common lumber grade. On account of the high price, however, they generally use No. 2, and even No. 3 common. Usual thickness of basswood lumber for boxes are three-eighths, one-half, and thirteen-sixteenths of an inch. Narrow widths can often be utilized.

Box makers use the grading rules of the various lumber associations in the purchase of lumber. For box shooks, however, grading rules have been drawn up for different woods by the National Association of Box Manufacturers. There are four grades for basswood shooks—clear, No. 1, No. 2, and No. 3, as follows:

Clear grade.—Lumber in the clear grade of boxes must be practically free from knots, and must be of good color, running largely to white basswood. This grade may contain, however, 15 to 20 per cent. of red color, but must not contain black or brown.

Grade No. 1.—Lumber in grade No. 1 of boxes must be good, sound material of mixed colors, light and brown, and should contain at least 50 per cent. of reasonably light-colored basswood. Small, sound knots are allowed in this grade, and some stain.

Grade No. 2.—Lumber in grade No. 2 of boxes must be reasonably strong but shall not be graded as to color. Brown basswood can prevail in this grade; small knots and shake can prevail, but not in sufficient quantities to materially weaken pieces. Some stain is allowed in this grade.

Grade No. 3.—Lumber in grade No. 3 of boxes is not graded as to color. Black knots and stain are allowed in this grade.

Baskets, mainly those for holding grapes and berries, are often made of basswood. The splints are sometimes of this wood because of its good working qualities and good appearance; more often, however, the sides are of some tougher wood, as birch or maple. The covers and bottoms of such baskets are quite commonly of basswood, because it is light in weight and nails easily. These parts, since they are small, can often be made from waste in the manufacture of other basswood articles. Low-grade basswood is often used for crates. It is well suited for light crating, and narrow-width material can be used very advantageously for this purpose.

Machinery & Equipment

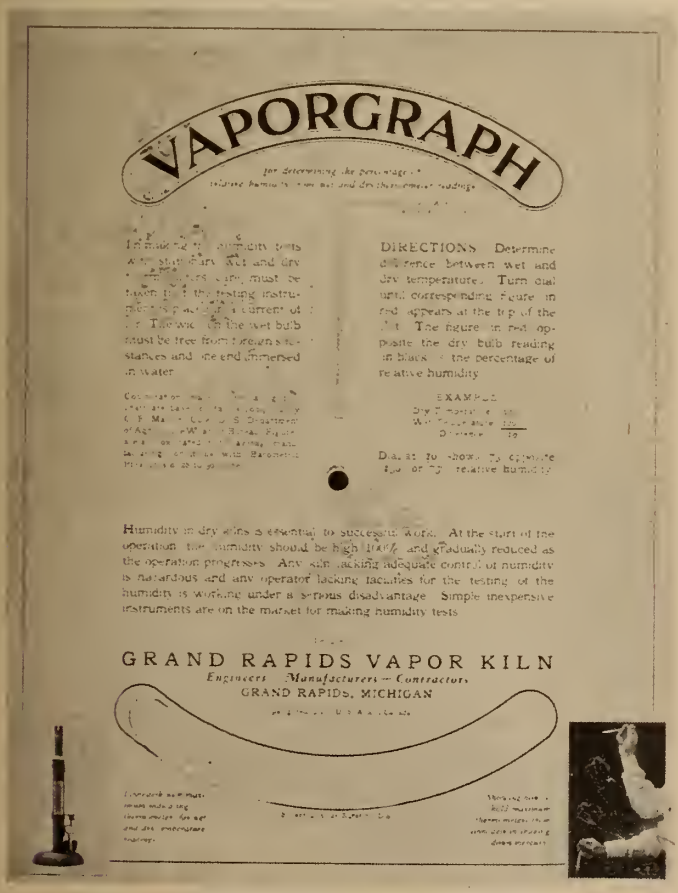
A Relative Humidity Chart

The "Vaporgraph" is a new relative humidity chart that has just been designed and distributed by the Grand Rapids Veneer Works, Grand Rapids, Mich., manufacturers of the Grand Rapids Vapor Kiln. The chart is a very simple device for determining the percentage of relative humidity when the wet and dry thermometer readings are known.

As stated on the "Vaporgraph," humidity in dry kilns is essential to successful work. At the start of the operation the humidity should be high (100%) ad gradually reduced as the operation progresses. Any kiln lacking adequate control of humidity is hazardous and any operator lacking facilities for the testing of the humidity, is working under a serious disadvantage.

Simple, inexpensive instruments are on the market for making humidity tests, and once the operator determines the wet and dry thermometer readings, it is very simple, by means of the "Vaporgraph," to compute the percentage of relative humidity. The manner in which this done is as follows:—

Through a slot in the centre of the chart columns of figures printed in red on a circular rotating card can be seen. Each column of figures is headed by a number which represents the difference in degrees between the wet and dry temperatures. The numbers in the column represent the percentage of relative humidity corresponding to the dry bulb temperature indicated in black on the face of the card alongside the slot. Thus it is only necessary to determine the difference between the wet and dry temperatures and turn the dial until the corresponding figure appears at the top of the slot. The figure (in red) opposite the dry bulb reading (in black) is the percentage of relative humidity.

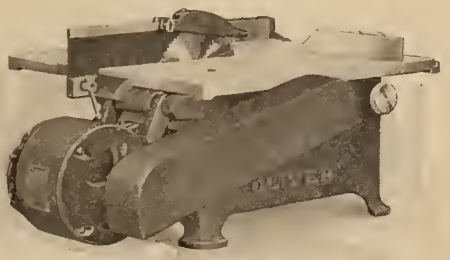


A simple chart for determining the percentage of relative humidity

A New Saw Bench

A new 7-inch motor-driven saw bench, designated as the Oliver No. 193, has just been put on the market by the Oliver Machinery Co., Grand Rapids, Mich. It is made for mounting on a bench, but a floor base especially made for this machine will be furnished when desired. The motor is mounted in such a way as to make it self-contained and both the saw and the driving belt are carefully guarded.

This machine has a sufficient capacity to cut two inches deep with a 7-inch diameter saw and to do dado work up to 3/8-inches wide when supplied with a dado. The table, which measures 21" x 24" is



The Oliver 7-in. motor driven saw bench

grooved for sliding cut-off gauge. The cut-off gauge may be used on either side of the saw. It may be set at any angle and is arranged to receive a wood face piece if desired. The ripping gauge, which is of substantial design, is instantly locked by hand knob. The table tilts and a graduated dial indicates the position of the table at all times. A stop is provided to facilitate putting the table in a horizontal position where it is most commonly used.

The machine is regularly equipped with a ½ h.p. motor running about 1,800 r.p.m. and belted to give the saw arbor about 5,000 r.p.m. speed. The saw arbor runs in ball bearings.

For single phase or three phase current a heavy snap switch is furnished and made part of the regular equipment as well as the motor and if the machine is to be operated from a lighting circuit sufficient cord is furnished for an ordinary connection to lamp socket.

The saw guard is adjustable up and down to allow for varying thicknesses of stock. The splitter guard is fastened to the table back of the saw to keep the stock from pinching the saw.

The bench type of machine is 10-inches high.

When mounted on floor column the top of the table is 32-inches from the floor.

Regular equipment consists of one 7-inch diameter, combination rip and cross cut saw, saw guard, splitter guard, double faced ripping gauge, one positive clamp cross cut gauge, endless leather belt, cast iron belt guard, electric motor of proper kind and size, switch, cord and plug for light socket attachment or switch only for power current.

Distributing Costs

"The buying public has long recognized that the spread between producers' and consumers prices is unreasonable for many classes of goods. The need for effective solution of the problem of high distribution costs has been greatly accentuated by the advance in the general price level. Producers are coming to realize that these costs constitute a serious deterent to consumption and a check on business." Such is the comment of the National Bank of Commerce in New York, a well known financial authority.

"Present costs of distribution can not be attributed to any one factor or group of factors," it is further stated. "The case was stated adequately in June 1922 by the chairman of the Joint Commission of Agricultural Inquiry:

" 'We came to the conclusion that the increasing cost of distribution is partly due to the more complex character of modern living conditions, partly to the variety of the consumer's requiremets, customs, and habits, and partly to unorganized and unstandardized farm production, which increases the risk of the middleman; partly to overplant capacity which increases capital cost and induces seasonal unemployment; partly to production in excess of effective demand which congests the channels of distribution and adds to the charges for interest, storage and obsolescence; partly to over-competition which brings about duplication of agencies and adds expensive service for accommodation, conveniences, luxury to the costs of distribution; partly to the ever-widening radius of distribution of many commodities which adds to the cost of selling; partly to the increased cost of transportation and partly to the fact that the agencies of distribution are not coordinated so as to make possible an even flow of merchandise from the producer to the consumer.' "

"Distribution costs should come down, but there is no simple method by which this result can be accomplished. The entire elimination of some types of organization may be necessary, and the consolidation of existing agencies in manufacture, warehousing and selling may be required to secure results. The more direct the line of dealing between the original producer and the final consumer, the more nearly shall we come to an effective solution of the question.

"The present system is largely an inheritance of traditions reaching back to the period before modern methods of production, transportation and communication had been developed. Far reaching reorganization is demanded and for its accomplishment ability of the highest order will be required, together with courage to eliminate every needless step, and fearlessness in departing from traditions which may be found to have no basis for survival under modern conditions. So great is the need that rewards are certain to be commensurate with the services of those men of vision and determination who bend their efforts toward the solution of the problem of successful distribution at low cost.

"The responsibility is not limited to the distributive trades. Production must be more carefully gauged in relation to consumption, and destructive competition must be avoided. Much waste can be eliminated by standardization of products. Better organization of the physical facilities of terminal markets would materially reduce distribution costs. Consumers must realize that elaborate service is expensive, that the more hands through which a commodity travels the greater the cost, and that systematic and orderly purchases are a factor in securing lower prices."

Six Fundamental Questions

Secretary C. B. Harman, of the Southern Sash, Door & Millwork Manufacturers' Association, Atlanta, Ga., some time ago sent out to members of the millwork industry generally six questions pertaining to the millwork industry. A prize of $25 was offered for the best reply to the questions. A committee who examined the replies awarded the first prize of $25 to D. B. Mackenzie, superintendent of the Roach & Musser Co., Muscatine, Ia.

The questions and the answers as prepared by secretary Harman, who states that they are not intended as official or technical, are as follows:

1. Q. What is lumber?
   A. Lumber is the product of trees manufactured into dimension, scantling, planks or boards.
2. Q. What is a knot in a piece of lumber?
   A. A knot in a piece of lumber is the root or part of a limb of the tree from which it was sawed.
3. Q. What is blue stain in lumber?
   A. Blue stain in lumber is a lower form of plant life known as fungi which discolors the sap wood but is not decay or wood destroying.
4. Q. What is mildew on lumber?
   A. Mildew on lumber is a form of mold, but principally superficial and, as blue stain, is not of itself decay or destroying.
5. Q. What is millwork?
   A. Millwork is that part of wood building material as is usually shaped, fitted and completed by carpentry and does not include anything in the way of rough or dressed framing lumber, flooring, ceiling, siding, furring, laths, shingles, nor anything else not made of dressed finish or shop lumber.
6. Q. What does "knocked down" mean as applied to millwork?
   A. Knocked-down applied to millwork means that all of the parts or members of any given article or piece of work, are worked to detail or stock pattern, cut to proper size and put together in a bundle or package so that they may be assembled or put together by some one else.

It is cheaper to use a good boiler solution for removing the sediment off the plates than to burn extra coal because of the sediment.

Never mind if competitors do tread on your heels as long as you keep them behind you.

Upholstering and Trimming

Double Stuffed Chesterfield

The Procedure in Upholstering a Large Sofa in Which More Substantial Construction is Attained by Double Stuffing

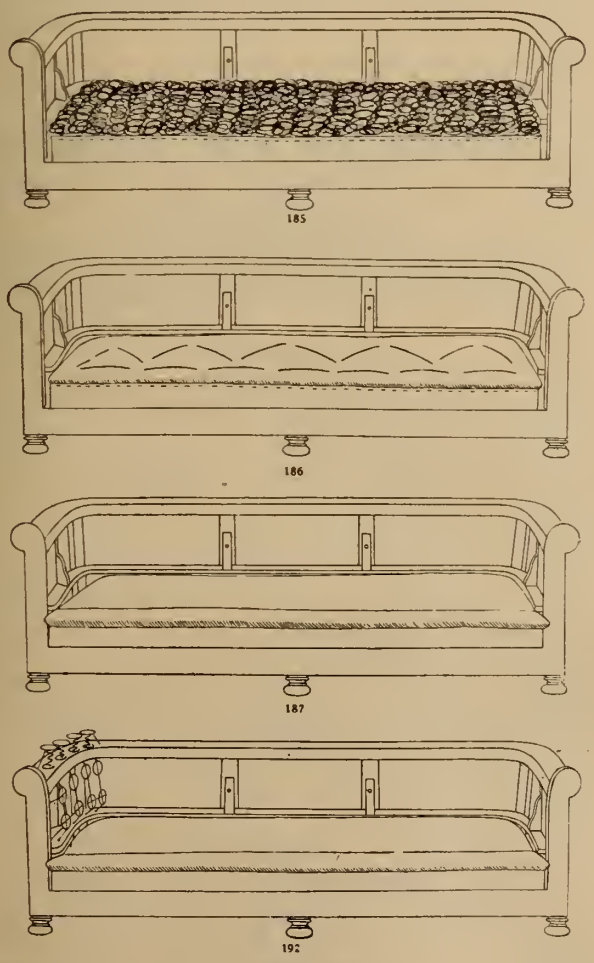
The seat of a sofa as large as the one we are treating is more substantially constructed if double-stuffed, because the stitching through and through of the hair top helps to flatten the seat into a platform on which the cushions may rest.

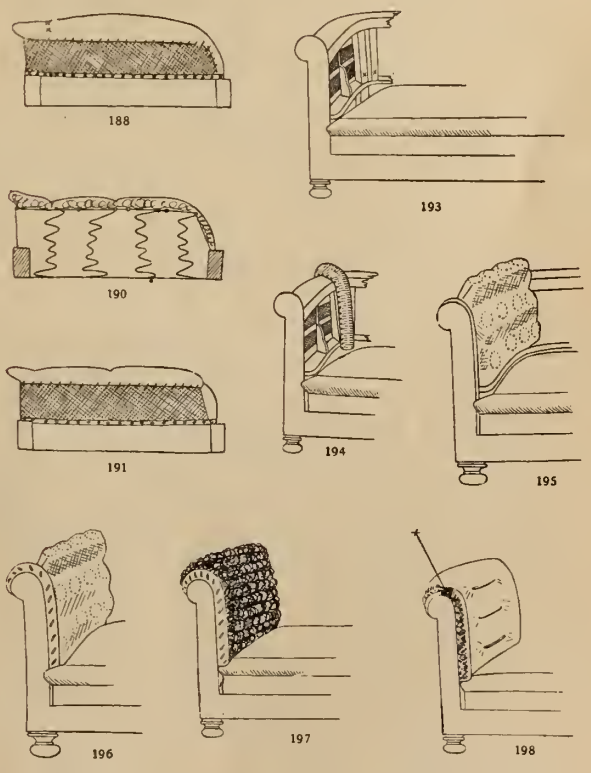
The hair is smoothly woven into a compact mass as shown in Fig. 185. This is covered with burlap and then stitched through and through as shown in Fig. 186 and in the cross section 190. It will be noticed in this cross section that the front edge projects about one inch beyond the wire. This edge is stitched to form a soft roll and the final coating of hair is then laid on and covered with muslin.

It will be noticed in cross section 191 that both the burlaps and muslin are sewn to the wire as there is no necessity for carrying these fabrics down to the frame for tacking as the wire at each end of the seat forms a solid place for attaching and this method avoids encumbering the space under the rail where the final coverings have to be tacked.

We have already explained that in conjunction with the use of down cushions for furniture seats the surface of the permanent upholstering which forms a platform on which the cushions may rest must be depressed so as to compensate for the bulge of the under part of the cushion. A line of stitching through muslin to spring burlaps, five inches back from the front edge of the roll, creates a very definite depression at this point and from that point back the balance of the seat should be as flat as it is possible to make it.

The cross section shown in Fig. 188 illustrates the shape to be avoided for even if a line of a stitching forces a depression at the point XX the center of





Details of the upholstering of a double stuffed Chesterfield

the seat is so high that the down cushion would never properly lie in place.

To save material, the platform is only covered for a space extending about five inches back from the nosing or for convenience back to the point where the seat has been stitched down to the spring burlaps. The balance is covered with sateen.

When finally completed in muslin the piece has the appearance of Fig. 187. Contrary to the procedure in the majority of cases the arms are next to be treated and in order to make them not too bulky and at the same time provide them with springs, the webbing foundation for the springs is attached to the outside arms. It will be necessary to provide supplementary tacking blocks, unless already provided in the construction of the frame, which will permit of a crevice separating the arm from the back, the two blocks to which we refer being indicated by XX, Fig. 193.

A narrow, wedge-shaped roll is built up with hair enclosed in burlaps on the face of these blocks as shown in Fig. 194. This roll is shaped to approximately the dimensions of the nosing which is shown on the front of the arm in connection with Fig. 196.

Twelve springs are employed in the arm, placed as indicated in Fig. 192, the two bottom rows being full-sized pillow springs and the top row being either small-sized pillow springs or half springs. After having been tied down the springs are covered with burlaps as shown in Fig. 195 and the nosing, which has been employed for the finishing of the arms of all of the pieces described in this series, is attached and stitched as indicated in Fig. 196.

A coating of hair is next applied by bridling or by stitching through to the spring burlaps and this is covered somewhat after the manner of a double stuffing, these two steps being indicated in Figs. 197 and 198.

It will be noticed by the cutaway portion of the nosing in Fig. 198 that the burlaps which confines the hair of the double stuffing is not attached to the nosing but goes down to the frame behind the nosing in order to give the greatest possible flexibility to the springs.

Prevention of Moths

By Ralph F. Windoes

The subject of moths and their prevention has been given considerable study, as it appears to be one of the serious problems of the upholstered furniture industry. I was recently talking to a manufacturer whose entire output goes to a chain of retail stores. Customers of these stores within a certain period, entered eighty-two complaints with regard to moth devastation and all of them were on mohair covers. In many instances owners of the goods left them unattended through the summer months, doing nothing more than placing a sheet over them. This afforded the moths wonderful opportunity, and when the owners returned they found their furniture all but ruined. In the majority of cases the moths laid their eggs at the base of the pile in the space between the base and the back and arms. In an effort to reduce the devastation at these points, this particular manufacturer is now sewing a strip of denim to the mohair so that the denim extends up and past the seat about two inches. Although it shows when the cushions are removed, there is no indication of it when the cushions are in place. This practice not only helps to prevent moths by keeping the mohair out of this dark space, but it effects a saving in mohair. On a popular priced cover he is saving $1.50 in mohair on each davenport. With the thought in mind that this little kink might appeal to other manufacturers, I have been working with a certain chemical laboratory in Chicago in an effort to evolve a solution to put on the denim that would make it a permanent insecticide. By using this solution in combination with this method of constructing covers, the danger of moths at this point would be entirely eliminated. As all other seams and corners are exposed to light and are easily reached with the brush-broom, I believe that we have almost solved the problem of moth devastation after the goods have been delivered by the retailers.

Cleaning of Upholstery Leather

A special committee composed of men with many years' experience in manufacturing the several kinds of upholstery leather has considered the question of informing users of the merits and wearing quality of such leather and the methods that should be used in cleaning the same.

If upholstery leather has been properly manufactured its finish, whether in the cheaper or better grades, should give long wear and retain its original beauty. Futhermore, if not injured by attempts to improve it the surface of upholstery leather will remain in good condition after the article on which it is placed has become useless.

It is found that the cause of stickiness and loss of lustre on upholstery leather is largely due to use of polishes or cleaning preparations which injure the enameled surface.

Information and Inquiries

You are cordially invited to make use of this department

Wants Red Tennessee Cedar Chips

1 Chatham St.,
Hamilton, Ont., Jan. 1st, 1923.

Editor, "Canadian Woodworker,"

Kindly tell us where I can procure Red Tennessee cedar chips, such as would be made by the planer or jointer. I can use a considerable quantity of these, and wil appreciate any information you can give me.

Yours truly,
Gilbert S. Wright.

We suggest that you get in touch with some of the manufacturers of cedar chests who would probably have a supply of these chips to dispose of. Quite a number of concerns manufacture cedar chests, among these being: Keenan Woodenware Co., Owen Sound, Ont.; Lindsay Woodworkers, Limited, Lindsay, Ont,; H. E. Furniture Co., Limited, Milverton, Ont., and the Chesley Chair Co., Chesley, Ont.

Fretwork Designs and Supplies

513 Ross Building
Saskatoon, Jan. 11th, 1923

Editor, "Canadian Woodworker,"

Will you kindly send me the address of some firm

in Canada that handles fretwork designs and supplies.

Yours truly,
L. W. Ross.

Although we have made a considerable number of inquiries, we have not been able to discover that any firm in Canada makes fretwork designs and supplies. A few of the larger departmental stores, such as the T. Eaton Co., Limited, Toronto and Winnipeg, handle in a moderate degree supplies of this character that are manufactured by Hobbies Limited, of Dereham, England. It is just possible that these stores will be able to meet your requirements.

Book on Upholstering

Winchester, Ont.,
Dec. 29th, 1922.

Editor, "Canadian Woodworker,"

Can you tell me where I might procure the book by John W. Stephenson, called "Furniture Upholstering?"

Thanking you in advance for the expected information, I am

Yours very truly,
J. H. Larne.

Cornwall, Ont.,
Dec. 29 1922.

Editor, "Canadian Woodworker,"

Kindly let me know where I can obtain the book "Furniture Upholstering," by John W. Stephenson? What would it cost me?

Yours very truly,
Canadian Cottons Limited,
Per W. V. Boyd,
Manager.

The book you mention is published by Clifford & Lawton, 373 Fourth Ave., New York, but we are advised that at the present time it is out of print. The author is, however, working on a revised edition although it cannot be definitely stated when this will be ready for distribution. The price of the old edition was $4.00.

Insulation for Refrigerators

Steinbach, Man.,
Jan. 2nd 1923.

Editor, "Canadian Woodworker,"

I would like to know what material is used for insulation of butcher shop refrigerators? Can you mention the name of a firm from whom I can buy such insulation?

Yours truly,
Frank P. Friesen.

The material that is generally used for insulating butcher shop refrigerators is sheet or granulated cork which may be obtained from the Armstrong Cork & Insulation Co., Limited, 11 Brant St., Toronto.

Picture Mouldings and Tools

560 Park View Drive
Medicine Hat, Alta.,
Dec. 17th 1922.

Editor, "Canadian Woodworker,"

Can you inform me of the name of a firm that handles picture moulding and tools, etc., for the trade in Canada?

Yours truly,
W. F. Stedworthy

We might refer you to the Phillips Mfg. Co., Limited, Carlaw Ave., Toronto, who handle a full line of the goods mentioned in your inquiry.

Duotones Prominent at Grand Rapids

The mid-winter furniture exhibition opened in Grand Rapids, Mich. on January 1 with an unprecedented influx of furniture buyers from all over the Union. It is always interesting to Canadian manufacturers and designers of furniture to learn what the people across the border are demanding in style and finish.

Upon walking through the exhibition buildings, at Grand Rapids, even the most casual observer could not fail to notice that nearly every line included samples of duotone work.

Duotones, when produced by the use of overlay, are very striking and have many manufacturing advantages over the scratch-line variety. The latter, of course, requires a better grade of wood throughout the general construction, especially so on the fronts and tops; whereas the overlay helps to lift up the general appearance of straight and plain wood.

When the duotones were first introduced, they were sometimes offset by very fine moulding, and this was dyed much darker, usually black. This produced a striking effect, but from a selling standpoint, could not be called a success. The scratch-line seemed to be favored, but we now see it taking second place and the overlay seems to come first in the general preference of the buyer.

The finish of duotones has a great deal to do with the popularity of this style. In the first place, it is the harmony obtained between the two shades. It is human nature to like a pretty piece of wood, and thus, we find curly-birch, bird's eye maple, walnut burl, and crotch, etc., largely used for the overlay panel. When these are dyed through and through, with what the trade calls "boiling dyes," the beauty of the wood is brought out more, there is no difficulty in touching up the edges, and the purchaser sees a perfect job.

Wood lacquer seems to be the material generally employed to bring out these effects to the best advantage. The finisher has done his best to produce a complete harmony of tones between the dark and the lighter shades, and looks to a finishing material which will enhance the looks rather than detract. He wants to feel that his job is thoroughly protected without drawing attention to the protection coat. Yet he knows that same coat must withstand the wear; it must be tough; it must not mar; it must permit of cleaning and especially must it be moisture proof; because, a pretty table with its four pieces of crotch veneer, painstakingly matched and laid, and not have is properly protected with a waterproof finish would soon be ruined.

Laminated Baseball Bats

It is said that laminated baseball batts, built up of short pieces of ash joined with waterproof glue, such as is used in aeroplane production, are as resilient, durable and satisfactory as the one piece kind.

Eagle-Ottawa Leather Co.

TANNERS OF

FURNITURE LEATHER

OF EVERY DESCRIPTION

We are making a specialty of cutting

Spanish Split Leather for Chair Manufacturers

Quotations and samples furnished on application

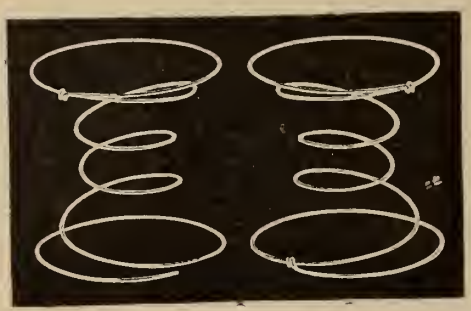
We will be pleased to supply a very attractive sample book, of all our grades on application.

GRAND HAVEN - - - - - MICHIGAN

"IDEAL"

FURNITURE and UPHOLSTERY

SPRINGS



Double or single cone, plain or knotted ends, in any height, shape or gauge of wire.

All "Ideal" Springs are made of "Premier" Brand—the best steel spring wire obtainable. Before shipping, the springs are japanned and heat-treated, giving an enamel finish and making the spring more resilient.

Catalogue and prices on application.

MADE IN CANADA by

Ideal Fence & Spring Co.,

of Canada, Limited

Windsor - Ontario

Woven Curled Hair

LOOSE-CURLED HAIR

In All Grades and Colors

Samples Cheerfully Furnished

BLOCKSOM & COMPANY

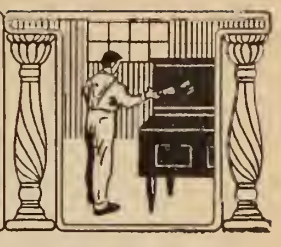
Sterilized Curled Hair

MICHIGAN CITY, INDIANA

Here's a Suggestion

Do you ever try keeping a file of your back copies of the "Canadian Woodworker"? Try it. Start with this issue. There are many articles that are worth keeping, as they offer valuable suggestions that will help you in your business.

THE FINISHING ROOM



Why Finishing Costs are High

So-called Knife Marks on Shaped Work are Really Bruises and Cause Trouble in the Finishing—Not Enough Use Made of the Scraper

The cost of finishing is an important item in the production costs of every furniture factory, and I have often wondered if production managers and superintendents realize fully the extent to which the quality of the woodwork bears upon the cost of finishing. Every finisher realizes how the one is related to the other, and some have tried to point it out. This has been successfully done by some, and others have long since given up the task of trying to remedy the matter of poor woodwork, and go on year after year piling on varnish in order to produce a smooth finish on a rough or uneven surface.

A few years ago a thick coating of varnish was considered to be the proper finish for furniture, but times have changed, and we now know that a much better finish can be produced with two coats of varnish than was formerly produced with four coats. In fact, I have seen three coats of varnish reduced to one coat, with much better results than were formerly obtained. Of course, where only one coat is applied, it can be put on slightly heavier than the individual coats where three are applied, but the cost of applying is no greater.

Why Finishing Costs Too Much

Moldings and other shaped work cost a great deal more to finish than they would if properly cleaned up. A great deal of shaped work shows what are called knife marks, when it leaves the machine, but which in reality are bruises. This may be the result of poor work on the part of the machine, or it may be on account of the wood being soft, such as some varieties of mahogany. The usual way is to sand such moldings until these marks are removed, then send the stock to the finishing room to be finished. If the wood is mahogany and a water stain is applied, the bruises will rise up, and what was a high place before the cleaning up was done, will be a low place, and the low place will be high, leaving the surface in pretty much the same condition as before. To produce a smooth finish on such a surface requires additional coats of varnish and a great deal of rubbing, all of which requires valuable time and material. Stock that shows knife marks, and is to be stained with a water stain, should be sponged with warm water immediately after it leaves the machine, and allowed to dry out before it is cleaned up. The water will not penetrate very far, but far enough to swell back the crushed fibres, and will not take very long to dry out.

I was looking at some furniture in a store recently, and it was some of the things I saw there that inspired this article. I have a habit of wandering through furniture stores, examining the different makes and the difference in the quality of work done in various factories. Almost every furniture store carries several different makes of furniture, and a visit to one that carries the product of several shops is an education, and often an inspiration to better work. Of course, one may sometimes see work that is no better (or even worse) than he is doing in his own shop, but often he will see some that is much better.

Wood-Scraping Machine Not Used Enough

It is quite evident from some of the things I saw, that the wood-scraping machine is not being used to the extent that it should be. This machine is no longer an experiment, and I can hardly understand a shop being without one. My information is that the majority of shops have one or more in use, but many are not used to best advantage, especially in preparing plywood for the finish. Too many shops build up the plywood and then use the scraper on the face veneer. This is starting at the wrong end. The scraper should be used on the core, to make a perfectly level surface on which to lay the face veneer. Face veneer is altogether too thin to stand the amount of scraping necessary to make a level surface, if it has conformed to the uneven surface below.

There is a new way of making plywood that is meeting with favor. Crossbanded plywood has usually been made five-ply, but the new way is to make it four-ply. The core is built up separately in the usual way, except that a heavier crossbanding is used than where the finished article is to be five-ply. Formerly it was thought necessary to put on a backing of veneer to balance the veneer on the face and prevent warping. Experiments, however, have shown that this backing is not necessary if the core is well-dried after building up and before laying the face veneer. The crossbanding on the side to be faced with veneer is scraped to a perfectly level surface, then the face veneer is laid. When plywood is made in this way very little scraping is required on the face veneer to put it in the very best possible condition for a good finish.

In the old days, before the introduction of the wood-scraping machine, when all surfaces were scraped by hand, it was impossible to make a perfectly level surface on the wood, and it was necessary to apply much varnish and rub this to a level surface, to counteract the uneven condition of the wood. This practice is still followed in some shops, but never in a shop that is up-to-date. Even in some factories where the wood-scraping machine is used, the practice is still in vogue, because they have not understood the fundamentals of preparing wood for a fine finish, as outlined above.

Scraper Does Better Work Than the Sander

The question is frequently asked: Which is better, the wood-scraper or the sander, for preparing a

surface for the finish? My answer is, both, because one is but the complement of the other. If I had to do without either, however, I would do without the sander, because I do not think it is possible to make the same absolutely level surface with a sander that can be made with a scraper; and a level surface is the all-important thing. Of course, the wood-scraper is capable of doing poor work if its operation is not properly understood and the knives not properly understood and the knives not properly ground and turned. One thing that should be watched in using the scraper, is, that a chip does not become caught in the knife. This is liable to happen at any time, especially when scraping mahogany.

Some tme ago a finisher had trouble with a ridge that raised from end to end on some mahogany table tops, as soon as he applied a water stain. The most careful examination failed to reveal anything unusual about any of the tops prior to the application. Subsequent investigation, however, revealed the fact that these tops had shown dents made by the wood-scraper, and the operator had put them through the machine again to remove the dents, or, more properly speaking, to bring the surrounding surface down to their level. When the water stain was applied, the fibres that had been crushed to make the dent, raised up to form the ridge. Had the stock been closely examined as it left the machine these dents would never have been there, because the first one would have been detected and the cause removed. Then, again, the operator should have soaked the dent with warm water, to raise it up, instead of cutting down the surrounding surface. Even had a water stain not been used, these dents would have raised up more or less in time, perhaps not until after the varnish had been applied, at which time the cost of correcting the matter would have been much greater.

A Combination Machine

I am looking forward to the time when some one will introduce a combination wood-scraper and drum sander—that is, a wood-scraping machine with one drum to give a light touch with fine sandpaper after the scraping. I have not yet seen any account of such a machine having been made, but believe it will be with us at no distant date, and when it does come it will greatly facilitate the preparation of wood for the finish.

Many shops have trouble with the drum sander because they expect it to do more than it was ever intended to do; they expect it to do almost the work of a planer and sander combined. If anything like good work is to be done with the triple-drum sander, the cuts must be light and made with properly-graded paper. It sometimes happens that level surfaces are cut full of low places by sanding with heavy pressure. Very few boards have surfaces of uniform hardness, and if the sanding is done with heavy pressure the cutting is deeper in the soft places than where the wood is harder. This condition may not be noticeable when the wood is in the white, but when it receives a coat of varnish the surface has the appearance of a rolling landscape. It would cost much less to put the stock through the sander twice, taking a light cut each time, than to do the work in one operation and leave a surface full of low places for the finisher to fill with varnish. A dime spent in the proper preparation of wood for the finish can easily save a dollar in the finishing department, and nowhere can a dime be spent more profitably—By Rudolph Kilbourne in the Woodworker, Indianapolis, Ind.

Production of Polychrome

Directions for Burnishing and for the Production of Estafado Finish

Things that are finished in polychrome should carry with them an individuality expressing the tastes and ideas of the artistic mind of each decorator for we are thoroughly convinced that quantity production is a thing of the past. A pattern made to turn out hundreds of pieces just alike must be forgotten. Give each decorator his materials and let him have a free hand when it comes to carrying out polychrome finishes. In that way an opportunity is given to continue polychrome and to bring out originality in each design.

The following are directions for burnishing lamps, candles, picture frames and novelties or other similar surfaces:

1—Sand the work until it is smooth.

2—Mix up a small quantity of fine Gilders Whiting with a very weak solution of hot glue and water. Apply two coats. The glue solution must be very weak otherwise it will chip and crack off from the frame.

3—Sand this down after it is dry with a very fine sandpaper, until it becomes smooth.

4—Take red or blue burnish size, mix with it a very weak solution of hot glue and water. Apply two coats. If this appears rough after it is dry, rub lightly with fine sand paper.

5—Take burnish gold bronze, mix a small amount of alcohol with it into a paste form, then add a weak solution of hot glue and water. Stir well while doing it. Always apply hot if you want good results. The best way is to keep the cup in hot water—that keeps it from chilling. Give two coats of bronze, letting first coat dry before applying the second.

6—Let dry for about five hours then rub lightly with the agate burnisher which must be prepared by rubbing the agate on a piece of leather with emery and crude oil until the glassy finish on it is removed. Then you are assured of good results.

7—Apply a coat of H. G. lacquer on top of the bronze and frame is complete. If you want to tone down the bronze to make it look antique, apply a thin coat of Japan colors, whatever shade is desired. Burnt umber is largely used. Thin with benzine, apply to the frame and wipe off high lights.

Estafado Finish—Stipple

On all surfaces to be polychromed by this method, whether brass, iron or wood, spray with one coat yellow lacquer enamel. When dry, brush on coat of stipple—fairly smooth, a two-inch varnish, long bristles, being used, which is also used to stipple the coat the body of which must be heavy enough not to smooth out before setting. Allow to air dry twenty-four hours. Spray over this a heavy flowing coat of yellow enamel, mixed approximately five parts enamel, two parts vitraline lacquer, three parts thinner. If this does not draw the undercoat (giving a surface effect somewhat similar to the skin of a crinkled pea), it is most likely due to a lack of linseed oil in white lead used in preparing stipple, as it has been noted that different brands vary. Add linseed oil to stipple and experiment along above lines until the

correct result is obtained. (The oil prevents the stipple coat from drying down to the base, and forms a skin which the enamel and lacquer coat pulls.) Allow to dry and glaze to suit taste. Master painters' colors can be used, smutting and wiping, or soft pastel shades of lacquer enamel can be sprayed, depending on the individual's taste or upon the design, saving thereby time and labor.

To prepare stipple coat, mix up a thinner of equal parts japan, turpentine and spar varnish. Add this to white lead and oil until consistency is obtained where coat will stay where placed when stippled.

Ornamental metal parts of cast brass are bright dipped, high lights polished, lacquered with vitraline rich gold lacquer, and backgrounds smutted.

Individual taste is, of course, necessary to obtain the best results, and designs of lamp bases or standards must be in keeping with the period finish to be reproduced.

Burnish Powders

Burnish powders are coming into more or less general use, and most manufacturers who have air brush equipment are using them to produce burnishing gold and color effects on mouldings and metal ornaments. The method of application is as follows:

First sandpaper the wooden surface very smoothly, using a fine grade of sandpaper, dust and apply the first coat of which is known as "gilder's whiting glue size." The size is prepared as follows: Dissolve one-half pound of Cooper's white glue in warm water. (Any other first-class animal glue that is free from acid will answer.) This mixture is known as "stock glue" or "glue sizing." Mix with this stock glue sufficient gilder's bolted whiting to form a mixture the consistency of very thin paint. This should be sprayed on the surface—three coats. The second and third coats should not be applied until the others have dried thoroughly, and the first coat, after drying, should be rubbed down with fine sandpaper. When the third coat is absolutely dry, and sanded down, apply the "clay coat."

The clay coat is made from red burnish clay mixed with the glue stock described above. It should be as thin as possible, but it must cover the white coat completely. This is the most important coat, as it is the underground upon which the powder is applied and which permits of the burnishing.

The bronze, or burnish, powder is also mixed with the glue size. The proportion is approximately two pounds of powder to one gallon of stock glue. The mixture should be thin, but enough bronze should be carried in it to thoroughly cover the clay coat. Before applying, add two teaspoonfuls of alcohol to the gallon mixture, and agitate the three ingredients thoroughly.

The application of this bronze mixture should be done with the air brush, or a soft camel's hair brush can be used. The coat should be thin. The mixture should be warm—not less than 120 degrees Fahrenheit, and previous coatings should be bone dry.

When the bronze coat has thoroughly hardened, it can be burnished with an agate burnisher, by simply rubbing the burnisher over the bronze until the desider effect is produced.

If a protective coating is wanted, the work should next be sprayed or brushed with lacquer, or a bronze protector. Different color effects can be secured by using flat japan colors. These colors must be those which have been ground in japan, as nothing else will answer, and they should be thinned with benzine.

If a bright burnish is desired, rub the bronze powder coat lightly with beeswax and apply a bit of the wax to the burnisher.

If bronze is to be used over compo, it is necessary to first coat the work with white or orange shellac before proceeding with the white coat as above outlined. If metal is to be burnished, the first coat should be a thin, clear, hard drying lacquer, over which the first white coat is applied—By Walter K. Schmidt, in the "Furniture Manufacturer and Artisan"

Shellac Consumer Protected

A resolution protecting the jobber, dealer and consumer of shellac in the United States and Canada, was unanimously adopted in November by the following associations: The United States Shellac Manufacturers Association; the National Varnish Manufacturers' Association; the Paint Manufacturers' Association of the United States; and the National Paint, Oil and Varnish Association.

The resolution follows:

Whereas, The term "shellac" has been applied not only to products composed of shellac gum dissolved in alcohol, but also to compounds of shellac and other materials; and,

Whereas, This practice, if continued, will result in the debasement of the term "shellac," confusion in trade and deception of purchasers; now, therefore, be it

Resolved, That the term "shellac" on labels or on advertising means only shellac gum cut or dissolved in alcohol;

That if such shellac be reduced, reinforced or modified, the term "shellac" shall likewise be modified by the addition of the word "compound" in conspicuous letters;

That if the shellac content be less than 50 per cent. of the solid content by weight of the material, the word "shellac" shall not be used on labels or advertising, except as a part of the formula, if printed, except in connection with the word "substitute" or "imitation;" and be it further

Resolved, That this information shall be plainly shown on all containers, bills, contracts and letters of quotation.

It is recommended that products containing less than 50 per cent. by weight of shellac be sold under arbitrary trade names or brands.

New Casein Glue Factory

The Casein Mfg. Co., 15 Park Row, New York City, has recently erected and equipped a new factory at Bainbridge, N. Y., for the exclusive production of "Casco" waterproof glue, that greatly exceeds the capacity of the old factory. The company has four factories at Bainbridge, N. Y., for making "Casco" waterproof glue, powdered milk, sugar of milk, milk albumen, etc., and they consume approximately 100,000 lbs of milk per day.

This new factory for making the standard grades of "Casco" waterproof glue, is said to be the largest in the world. Provisions have been made for chemically and physically testing each batch of glue before leaving the factory and samples are retained and labeled as matters of record.

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BIRDS EYE VENEER COMPANY
ESCANABA, MICHIGAN

"Brown Bird's-Eye Maple"

Veneers and Panels

Using up Veneer Cuttings to Advantage

If the Plant Has a Veneer Jointer and Taping Machine a Great Many Economies Can be Effected—Machines are Handy for Several Purposes

By Traveller

A month or so ago the writer had occasion to take a customer into a piano factory to show him some material that he was interested in, and as we were passing through the veneer room a veneer jointing machine caught his eye. He stopped to examine it, and the superintendent of the plant, who was accompanying us, demonstrated how the machine would make a perfect joint by jointing some narrow pieces of veneer and then taping them together on the taping machine. In the finished piece, which was about ten inches wide, there were four joints.

These joints were perfect and would defy the most experienced veneer man to detect them. My companion was greatly interested and intimated to the factory superintendent that he would be glad to know if the jointing and taping equipment had proved a profitable investment. He stated that he was in the furniture business and that they had considerable veneering to do and might be able to use similar machines if the saving would be worth while. The superintendent advised him that while he could not speak for the furniture business he could certainly tell him some of the savings that had been effected in their plant.

Proceeding to enumerate these savings he said: "Anyone who is acquainted at all intimately with the veneer rooms of the piano factories can not have failed to observe the large quantities of cuttings that are left over when logs of veneer are cut up into the desired sizes necessary for the various parts of piano cases. The bulk of these cuttings are from twelve to sixteen inches long and from sixteen to twenty-four inches wide. Some of this material can, of course, be used for the small parts of the cases, but very rarely can even half of it be used in this way. At the present price of veneer this represents a big loss if it has to be thrown away.

"In addition to these short pieces there are generally long pieces varying from two to four inches wide, and even six inches, that are trimmed off the edges. No matter how careful the cutter is these cuttings will occur. With an experienced cutter, of course, the waste will be less, but in all cases there is sufficient to start a person figuring. There have been a great many suggestions from time to time, mostly from impractical theorists, setting forth ways of using up these cuttings by making up novelties and small items. These suggested items however, constitute a separate and distinct business and it would be foolish to try to work them in with our product.

No Serious Loss From Waste

"Since installing our jointing and taping machine we find that we can reduce the waste from cuttings to the point where the loss is not a serious matter at all. This is only one of the advantages, but will give you an idea. Formerly we purchased veneer specially for inside work, for the insides of gables, top doors, bottom doors, tops, etc. This was a cheaper grade of wood than we used for face veneers, but it ran into quite a sum of money in a year. We still purchase some, but we have been able to joint up a lot of our cuttings for this inside work at a minimum cost for labor. It only takes a very short time to joint and tape a big pile of cuttings.

"Take for instance the insides of bottom doors. These are the removable doors that go underneath the key board and conceal the lower part of the wires and the mechanism by which the pedals control the dampers, etc., for producing loud and soft music. These doors, or panels they might be called, are about twenty or twenty-two inches wide, depending on whether the piano is an apartment size or a larger one. They are very rarely removed once the piano is sold to a customer, and for that reason the inside is hardly ever seen, so seldom in fact that we paint the insides instead of varnishing them. Three or four cuttings can be joined together, the joints running either lengthwise or crosswise as long as the grain runs in the same direction as the face veneer, and just as satisfactory a job is obtained as if the veneer was all in one piece. The veneer being exactly the same texture as the face veneer, the "pull" is the same on both sides, thus minimizing any warping that might occur.

"The same idea is carried out on the gables except that the front top half of the gable is exposed when the top door is removed for tuning. We therefore make a point of using a piece without joints large enough to take care of this exposed portion. The balance of the inside can contain several joints, if necessary. Like the inside of the bottom doors we paint the unexposed portion of the insides of the gables.

"The same with the tops. The top of a piano is in two pieces, the back half being secured to the top of the back, while the front half is hinged for raising up. These tops are veneered in one piece and ripped afterwards. If face veneer is scarce a piece of plainer figure can be jointed on to the back where it will be covered when the top is ripped and secured in place."

Skilled Labor Not Necessary

In addition to the utilization of cuttings the superintendent pointed out that labor possessing less skill can be used in a veneer room if machinery is used. It takes a mechanic to joint veneer by hand and make good joints whereas with a jointer and

taping machine one skilled man can do all the laying out while the less skilled help can do the jointing and taping. It does not take long to break in a man to run either of these machines because neither of them is very complicated.

Another point brought out was that jointing up cuttings provides a good "fill in" job for the helpers while the man in charge of the department is preparing other work, and in getting practise on work of this kind it is not long before these helpers become exceedingly proficient and skillful in the art of jointing and matching veneers. Frequently if a young fellow in this department shows promise he is graduated to other work.

The usual method is to send him from the matching and jointing department to the veneer laying department, and from there perhaps to bench work or to a trim saw, depending on which class of work he shows the most promise at. The superintendent advised us that a few years ago when good mechanics were scarce some of the best men he secured were traind by the veneer room route.

The question of training new men is beside the subject, but it is a serious problem that manufacturers will have to face in earnest in the near future. Skilled men in the cabinet trades are dwindling every year, particularly in the piano business. The organizations of a good many phonograph manufacturers were recruited at the expense of the piano factories. Any person in the habit of calling on these concerns, if interested in the working forces, will observe that the faces are the same that have been there for years, with few exceptions. These men are getting older all the time and there are mighty few young ones coming along. It may be that the bosses are figuring on passing out along with their crews and have decided to let the next generation do the worrying.

Used for Crossbanding

There is another saving in connection with the cuttings that our friend the superintendent dealt with. He said: "Very often if you happen to have a large quantity of plain figured cuttings left over, they can be jointed up and used for crossbanding for panels. It is much better to joint and tape them and use them in this way than to throw them away or leave them lying around the veneer room until they get all broken up and have to be thrown away. We buy a lot of common figured wood cheap, for tops and the inside of top doors, and frequently it cuts so that when we get two lengths for tops out of the log there are pieces about eighteen inches long left over. If there are a lot of tops, say a hundred, this leaves a lot of these ends which are useless unless you have some means of working them up into usable stock.

"Eighteen inch stock of this kind makes excellent crossbanding for panels of that width, and that is just about the width of our top doors. We do not go to a great deal of trouble jointing this stock. We just fill up the machine to its capacity and then run it through the taping machine until enough pieces are jointed together to give us the proper width. In this way we have some good dry crossbanding out of what would have to be thrown away if we did not have our machines. We single veneer all our stock so that the tape does not matter; it comes off when the crossbanded stock is put through the three drum sander to be smoothed up and surfaced in preparation for the face veneer.

"There is another point that might be mentioned in favor of the taping machine. We sometimes get shipments of poplar crossbanding that prove to be in two and three pieces when it arrives. If there happens to be a defect in the log it is made of, say a wind shake, this will cause each piece of crossband as it comes from the rotary lathe to come apart at this defect. Instead of throwing this stock away the man taking the stock from the machine will place the pieces together and ship it with the rest. When we come to lay this stock on our cores we cannot do so until it is taped together.

"Our taping machine comes in very handy for this work. It only takes a short time for our veneer crew to take hold of this stock and run it through the taping machine, thus making it into usable material. Of course, if we got too much of it we would not be long in looking into the matter, and having a show down with the firm we buy our crossbanding from, but one must expect a certain proportion of this kind of stock and it is too expensive to throw away. Before we got our jointer and taping machine we used to joint this stuff on a buzz planer and then tape it by hand, putting a few short pieces of tape crosswise at intervals to hold it together until we got it under pressure.

"Crossbanding is a ticklish thing to handle in this way and if it ever overlaps you will have some spoiled stock. With the taping machine we never experienced any difficulty whatever."

"Summing the matter all up I would say that you never realize how much you need a veneer jointer and taping machine until you get them. If you have a fair sized plant they will certainly pay for themselves in a reasonable length of time and then start to make money for you. I would not advocate any firm buying this equipment solely for the purpose of making use of their veneer cuttings, but it is one of the savings to be taken into consideration."

Improvement in Veneers and Plywood Business

The National Veneer & Panel Manufacturers, Association recently made a canvas of its membership on prevailing conditions. The report showed about 33-1-3 per cent improvement in business over last spring; that plants were operating at 87 per cent of capacity; that the log supply was about equally divided between high grade and low grade logs; that log costs were about 30 per cent higher; that there was an average of 109 employees per plant; that there were some advances in wages ranging from 24 cents to 44 cents per hour.

Canadian Producers of Veneers

In the November 1922 issue of the "Canadian Woodworker" on page 70 the following three firms were mentioned as manufacturers of veneers in Canada: Waterville Veneer & Panel Co., Waterville, P.Q.; Guelph Patent Cask Co., Scotstown, P.Q., and Sam. Lacaille, Nominingue, P.Q. Two names were omitted from this list, viz., Hay & Co., Limited, Woodstock, Ont., and the Pembroke Plywood Co., Pembroke, Ont., both of which firms have complete facilities for manufacturing veneer from the logs.

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VENEERS

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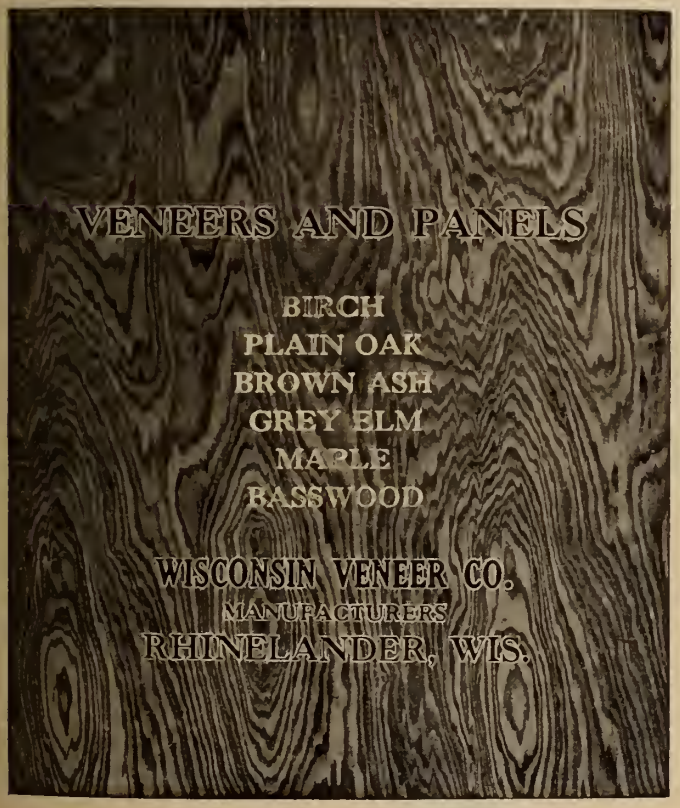

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SAVE FREIGHT

Rotary Cut Birch and Gum

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Rotary Cut Veneer

at our Burnside, Ky., Mill.

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½	Car 1/16'	Red Oak (log run)
½	Car 1/20'	White Oak (log run)
½	Car 1/16'	White Oak (log run)
1	Car 1/28'	Walnut (half round)
25M	1/28'	Poplar Crossbanding
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OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

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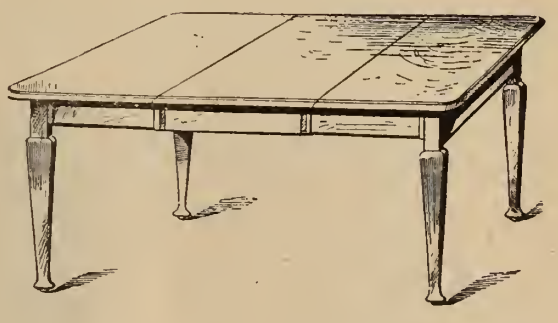

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Making Bow Panels for Bow-End Beds

The Forms Must be Carefully Prepared if Trouble is to be Avoided—The Importance of Obtaining the Right Thickness of Stock and of Getting it Under Pressure Quickly

Recently I visited a plant where they were having trouble with panels for bow-end beds. Some had loose veneer on the edges and others were showing blisters in the middle, caused mostly, I think, by the stock being of uneven thickness, and perhaps the forms in which they were pressed were not as carefully made as they should have been. We are having no trouble with out bow-end bed panels, and the following description of our methods may be of service to others undertaking this kind of work.

The first bed we made with a bow end required a panel with a radius of 5-in. on the inside and 5¾-in. on the outside. This provides a panel ¾-in. thick, which is just about right to receive the ⅜-in. dowels with which to fasten them to the posts.

Details of the Forms

After determining the size of the panel the next step is to make the forms or cauls in which to press them. This must be very carefully done. The concave and convex sides must be true to the radius of the circles for the outside and inside of the panel. This will enable you to exert an even pressure over the entire surface of the panel, provided, of course, that the stock is just ¾-in. thick. The forms should be made of good, clear lumber carefully dried and put together to stand lots of use. Birch is as good as any wood, and if properly made will last several years. We would use 1-in. stock, faced and planed to 13/16-in. thick, glued up into blocks for the bottom and top forms. The bottom form is 13½-in. long, 4¼-in. high and 21-in. thick. The top form is 8⅝-in. long, 2-in. high and 21-in. thick. The bottom form is reinforced with a piece 21-in. long, 13½-in. wide and 13/16-in. thick and the top form with a piece 21-in. long, 8⅝-in. wide and 13/16-in. thick—both pieces put on with plenty of 1½-in. No. 12 screws.

The top and bottom forms should be made in two parts, each part 10½-in. thick, as it is hardly possible to band-saw a block 21-in. thick. After band-sawing, the two halves should be glued together and the reinforcing pieces screwed on.

The two parts, after gluing, will need to be dressed by hand to correct any unevenness in the band-sawing. This is very important and should be entrusted only to a good mechanic who will dress the forms to the exact radius of the circles. The above description and sketch will give a clear idea of the construction of the forms.

You are now ready to fasten the guide castings to each end of the forms. The casting on the bottom form (C) has a ¼-in. iron pin in it projecting up 4-in., to receive the slot in the casting (D) on the top form. These guides are to hold the forms in position as the glued stock is being piled into them. They must be placed exactly in the center of the forms that when the pressure is applied the top and bottom of the forms will be parallel. A good way to accomplish this is to band-saw two pieces just the shape and thickness of the panel to be made, place these pieces between the top and bottom forms and hold them in position with clamps or handscrews. The top and bottom must be parallel. The castings are fastened with lag screws; while in this position number the forms so they will always be used in the same position, and make it possible to pile them one above the other and keep them straight.

You will notice two iron dowels projecting ½-in. from the bottom form, which fit into holes in the top form. These dowels are made by screwing a 2x⅝-in. lag screw into the bottom form and cutting the head off with a hack saw; the holes to receive them are protected by driving into them short pieces of ⅝-in. steam pipe.

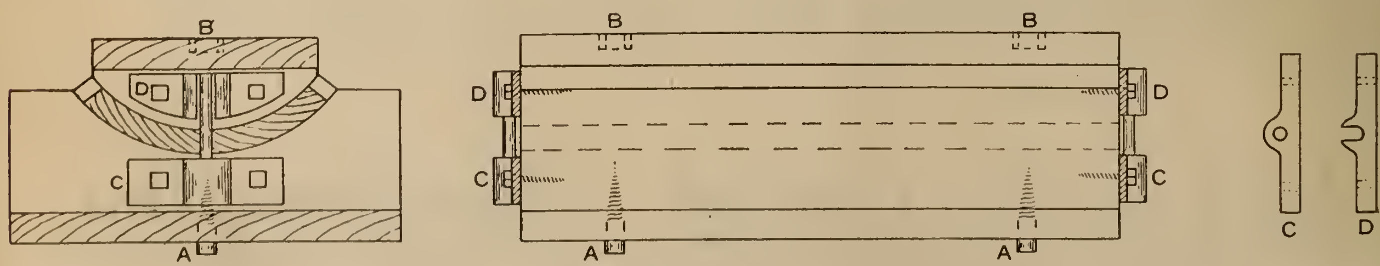
The press we use is about 5-ft. long, so we make four piles six forms high, and to start right we put a board on the bottom of the press with holes in it (to receive the dowels in the bottom forms), which enables us to start the piles in just the right position.

Can be Pressed Quickly

The reason for this somewhat elaborate preparation of the forms is to enable us to get the stock under pressure as quickly as possible after the glue is applied to the veneer, and with the guides on the ends of the forms and the dowels between we can place them in the press without a lot of fussing to get them exactly one over the other. In this way we can press bow panels in just about the same time as is required for flat stock of the same size.

Great care must be exercised in providing stock of just the right thickness. This is very important. If the stock is not right, the pressure will not be the same over the entire surface of the panel and loose edges or blisters in the middle will be in evidence.

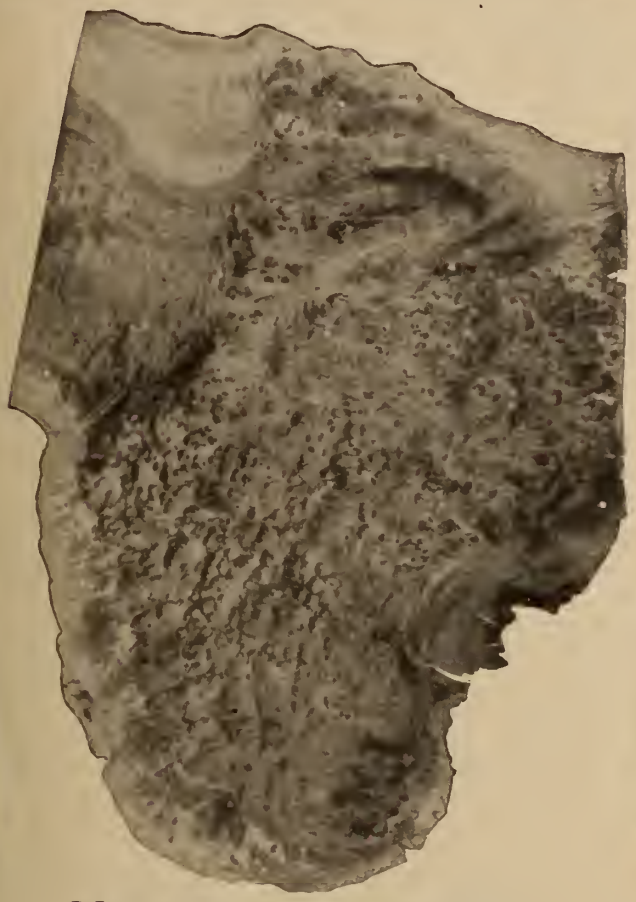
We have made the forms to prodoue a panel ¾-in. thick, and the stock must be just that thickness. We advise a nine-ply panel. This requires three cores



casting with slive dowels; C—guide casting with ½-in pin, on bottom form; D—guide
Showing construction of forms; A—dowels in bottom forms; B—holes to receeot, on top form

C. L. WILLEY COMPANY

The **Largest Veneer Plant** *in the* **World**



NOAH Webster says that the word Burl is derived from the Latin word Burrae, meaning Trifles. This reminds us that "Trifles make perfection, and perfection is no trifle."

The perfected beauty of a burl is made up of trifles, but such beauty is no trifle.

The perfected service of the C. L. Willey Company is made up of seeming trifles, including prompt, accurate, willing and intelligent response to your desires:—and it is our pride to give such service to architects, designers, cabinetmakers and other connoisseurs of fine veneer.

Veneer & Lumber

Walnut
American and Circassian
Mahogany
Quartered Oak
English Oak
Satinwood
Vermilion
Teak
Rosewood
And Many Other Foreign and Domestic Woods

(2005)

Burls and Pearls

IT is an old story to lumbermen, but how few others know that burls are the pearls of trees!

Burls, from which the most beautiful veneers are made, are caused by a disease of the tree, as truly as pearls are caused by a disease of the oyster.

The sap of the tree is its blood, and as one sap channel after another becomes choked in the course of this disease, the growing wood-fibres are pushed out of their normal symmetry by the force of flowing sap.

Year after year, as the sick tree grows, its burls grow faster still. Absorbing more than their share of nourishment, they swell into great gnarled tumors, starving normal branches by draining off their sap. In some gigantic redwood trees this process has continued for hundreds of years, producing burls twice the girth of the tree itself.

There is nothing superficial about veneer. Its beauty is the life of the tree, laid bare.

C. L. WILLEY COMPANY

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Sales Representative
for Michigan
232 Lyon St., N.W.
Grand Rapids, Mich.

W. B. VAN
Eastern
Sales Representative
Everett Hotel,
Jamestown, N.Y.

preferably basswood) 1/6-in. thick, four crossbands 1/20-in. thick, and the face and back 1/28-in. thick. The 1/6-in. core requires special attention to insure the correct thickness, so we buy rotary-cut basswood 3/16-in. thick and plane it to 1/6-in. A good way to get the correct thickness is to instruct the man who operates the planer to plane the stock so that three pieces will just fit his ½-in. caliper, and as a further precaution that the cores will be of an even thickness all over I would have them planed on a board. This is quite a common practice in some shops and most of the old heads familiar with the trick, but for the benefit of those who are a bit new in the game I will explain.

Overcoming Worn Planer Bed and Knives

After a planer has been used quite a long time, and possibly neglected a bit, it will be found that the bed has worn more in the middle than at the sides. The pressure bar wears in the same way, and also the knives wear fastest in the middle of the machine, so the stock coming from a machine in this condition is a little thicker in the middle than at the edges, not enough to make much difference in most work, but in the case of cores for bow panels enough to cause trouble. To avoid this we plane them on a board. We use three or four boards, or enough to keep the machine busy; they should be about 2-in. longer and 1-in. wider than the piece to be planed. Plane these boards to about 5/8-in. or ½-in. thick, mark them so you will know which way they went through the machine, then lower the bed 1/6-in., place the 3/16-in. stock on the boards and go ahead. The boards carry the inaccuracies caused by the wear of the machine, but leave the pieces planed on them an even thickness all over.

All of the stock must be thoroughly dried before spreading the glue. The above may seem a bit fussy to some, but I believe every detail necessary when one remembers the importance of getting veneered stock under pressure as quickly as possible after the glue is applied. Leave the stock under pressure over night, or as long as you would flat work of the same thickness.

The next very important step is drying the panels after removing them from the press. You recognize the importance of piling three or five-ply flat panels with straight sticks of even thickness between them at frequent intervals, and weighing them or clamping them between I-beams to keep them straight until the moisture that went into them with the glue has been evaporated.

The same care must be used in drying bow panels. We make twenty-four at one time, so we pile them in tow piles, each pile twelve panels high. We place at the bottom a 2-in. block that is shaped exactly to fit the 5-in. circle, and on top of the pile another block that fits the 5¾-in. circle, then the sticks between the panels must fit both sides of the circle. Place the two piles between I-beams and clamp down tightly with rods and turnbuckles. Leave them in the kiln four days and they will always retain their shape. If you want panels perfect in shape, make the blocks in which you pile them while drying to exactly fit the radius of the circle. A good way to do it is to band-saw the blocks a little larger or "off the line," as the boys say, and shape on a pattern at the shaper.

A little time spent in making accurately-formed piling sticks is well repaid when you fit the top and bottom moldings to them and find that they member exactly. The success of the job depends entirely on the accuracy of the cauls, the correct thickness of the stock, and the correct shape of the piling sticks in which the panels are dried. The panels are now ready to go to the machine department, where we assume you will know how to proceed.—By J. H. Hiscock in Veneers, Indianapolis.

Large Lumber Producers Amalgamate

An occurrence of unusual importance in the lumber industry is the announcement of the Bigelow-Cooper Co., Bay City, Mich. of their consolidation with Kneeland, Lunden & Bigelow Co. and the Kneeland-Bigelow Co. of that city. This combination, which became effective on January 1, is being operated jointly as a corporation under the title of Kneeland-Bigelow Co. and includes the two saw mills with their entire timber resources, hardwood flooring plant, planing mill, dry kilns, salt block, docks and yards now being operated by each company.

These extensive interests are the development of a small saw mill operation with limited timber holdings started by D. M. Kneeland and Chas. A. Bigelow in 1901 when The Kneeland-Bigelow Co. was organized and commenced business in Bay City. They continued to acquire additional stumpage and in 1905 purchased the saw mill and all timberlands of the Wylie-Buel Co., which was reorganized as Kneeland, Lunden & Bigelow Co. This acquisition established the combined interests as one of the largest timber holders and producers in the middle west. During the years following, the problem of proper marketing and distribution of their products necessitated further development, so in 1915 the Bigelow-Cooper Co. was organized for the operation of a hardwood flooring plant and to conduct a general wholesale lumber business.

This company has enjoyed continuous growth since its inception, necessitating increased facilities and modern improvements until to-day its operations cover a great variety of interests associated with the lumber industry. The hardwood flooring plant is one of the finest equipped and most efficiently organized operations in its line, with a capacity of twelve million feet annually, producing a full assortment of sizes and grades in maple, birch and beech. A complete planing and dimension mill adds the necessary equipment for general millwork and intensive fabrication of timber products. An important adjunct to the manufacturing facilities is sixteen modern dry kilns of the compartment type with a capacity of approximately seven hundred thousand feet which provides ample capacity for supplying kiln dried hardwood lumber to their trade. Their extensive yards covering 60 acres, including a seven hundred foot dock along the Saginaw River and air drying sheds for selected hardwoods enable them to carry a complete stock of all Northern hardwoods in various assortments to supply the particular requirements of varied consuming interests.

The present officers of The Kneeland-Bigelow Co. will continue as officials of the new corporation: Chas. A. Bigelow, president; Herman Lunden, 1st vice-president; Pierson Kneeland, 2nd vice-president; Walter N. Wrape, secretary and treasurer.

The Sidman Lumber Curing Process

IN

Remodeled or new, Wood, Brick or **Concrete** Buildings.

Fillers and glazes to preserve the building.

The TAG-ROESCH **Automatic** Time-Temperature and **Humidity Controller.**

Three-ply and Du-o-fold Army Duck Curtains, and Hussey Door Carrier Doors.

Automatic Heating, Ventilating and Humidity Systems for Varnish Rooms.

Reducing and Back Pressure Valves, Oil and Grease Extractors.

Sidmans AUTOMATIC **Suction System** for returning ALL Condensation DIRECT to the Boiler.

Cantilever Steam Traps and other Steam Specialties.

Active and Non-Down Draught Vent Heads for all purposes.

Cleanable Screen Panel and Window Ventilators.

Roller Bearing (Ott) **Channel Iron** Car Bunks and Transfer Cars.

Thermostats, Recording Gauges, and The Sidman Special Hygrometers.

For Description and prices, write

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Heating and Ventilating Engineers and Lumber Curing Specialists

LONDON THE C.M.L.C.K. Reg Trade Mark **ONTARIO**

"Below is Partial List of our

Dry Hardwoods:

4	"	4/4" No. 2 Com. & Btr. Basswood, not over 20% No. 2 Com.
3	"	5/4" No. 2 Com. & Btr. Basswood, not over 15% No. 2 Com.
2	"	4/4" No. 2 C & B Soft Elm.
2	"	8/4" " " " "
1	"	12/4" " " " "
		About 10% No. 2 Com. in 2 & 3"
2	"	4/4" No. 1 Com. & Btr. Birch.
2	"	5/4" " " " "
1	"	12/4" " " " "
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News of the Trade

A recent registration at Montreal is the British Empire Lumber Corporation, Ltd.

Jos Limoges, Terrebonne, Que., has started work on his new sash and door factory.

The buildings of the Canada Lumber & Box Co., Quebec, P. Q., were recently damaged by fire.

The Fisher Body Co., Ford, Ont., are putting up the walls of a new boiler room at a cost of $6,000.

C. T. White Co., Sussex, N. B., is contemplating the erection of a planing mill on Main St., Moncton, N. B., The mill will cost about $4,000.

G. K. Tyler, of the Seaman, Kent, Co. Ltd., has recently been appointed manager of the company's Montreal branch.

Georges Asselin, Coteau Station, Que., is putting in the foundations for a new sash and door factory, which will cost about $5,000.

Murray & Gregory, St. John, N. B., recently secured the millwork contract for the remodelling of the General Hospital which is costing about $14,000.

Hugh H. Reid, of the sales staff of Laminated Materials, Ltd., New Westminster, B. C., is on a business trip to Montreal, Toronto and other cities in the East.

Katalite, Ltd., Toronto, was recently incorporated to manufacture trucks, implements, flying machines, boats and other wooden vehicles.

Southampton Plywood Works, Ltd., Southampton, Ont., was recently granted a provincial charter to manufacture and deal in all kinds of wood veneers. Capital $100,000.

The Montreal Hardwood Flooring Co., Montreal, with O. Lussier and James Laing, as principals, is a recent registration.

McAuliffe Davis Lumber Co., Ottawa, general woodworkers are contemplating the erection of a storage shed to cost about $5,000.

Duro Construction Co. Ltd., Main St., Hamilton, Ont., are preparing plans for a planing mill and sash and door factory which will cost about $2,000.

The Port Dover Planing Mills, Port Dover, Ont., was recently visited by fire, partially destroying the plant and causing $7,000 damages.

D. Aitchison & Co. Ltd., Hamilton, Ont., is a new firm recently incorporated with provincial charter, to manufacture sash, doors and other wood products. Capital $100,000.

Fire recently damaged the factory buildings and equipment of the Acme Handle Co., Jones Ave., Toronto, to the extent of $450.00

Colonial Chemical Corporation of Canada, Ltd., Toronto, has been granted a provincial charter to manufacture and market varnishes, pigments, polishes and similar ingredients. Capital $100,000.

The employees of the North American Furniture Co., and the Owen Sound Chair Co., of Owen Sound, Ont., were called together recently and presented with a certificate of life insurance by the management.

The furniture factory owned by Emile Collins, St. Thomas, Que,, was completely destroyed by fire causing a loss of $40,000. The building was two-storey, 60 x 100 ft., and the owners expects to rebuild.

Trelford Paint & Varnish Co. Ltd., Toronto, was recently incorporated to manufacture and market all kinds of polishes, stains, varnishes and other similar ingredients. Capital $100,000.

Quebec Hardwoods, Limited, 211 McGill St., Montreal, have recently taken over the interests of J. W. Harding & Co., of that city. C. S. Harding is president of the new company, and J. A. Harding, managing director.

The hardwood flooring plant of the Seaman, Kent Co. Ltd., at St. Agathe, Que., is having additional manufacturing space and equipment installed. A new power plant is also a recent improvement in the modern factory.

George A. & Walter J. Bear, Limited, Toronto, is a new enterprise with provincial charter to manufacture and market furniture, rugs, carpets and other similar furnishings. Capital $40,000.

The Soo Lumber Co., Sault Ste. Marie, Ont., have started the work of remodelling their offices and are also making preparations for the erection of a two-storey, 21 x 80 ft., tile and brick warehouse. The two items will cost about $8,000.

La Compagnie V. Lemay, Ltee., St. Jean Deschaillons, Que., is a new firm with provincial charter to manufcature wooden boxes, baskets, handles and other similar products. Capital $10,000.

The Stratford Mfg. Co., Stratford, Ont., manufacturers of furniture and wood novelties, have issued a call for tenders for an addition to their plant on King St. The annex will be one-storey, 140 x 64 ft., of brick construction.

W. D. Patchell, of Midland, Ont., a well-known furniture manufacturer, has opened a factory at Midland, where he will make all kinds of wood specialties. The plant is modernly equipped and Mr. Patchell states that business is good.

The Laminated Materials, Ltd., Sapperton, B.C., manufacturers of plywood products, have reopened their plant again. They have taken advantage of the closing down to overhaul their machinery and plant and expect to have a busy year.

The Department of Soldiers Civil Re-establishment, Toronto, makers of all kinds of toys and novelties, whose work shop on Dupont St., was destroyed by fire some time ago, have secured the factory formerly occupied by the LePage Individual Communion Cup Co., at 2382 Dundas St. West, Toronto.

F. D. Palmer, Galt, for many years office manager in the firm of Shirley Dietrich, Ltd., widely known manufacturers of Maple Leaf Saws and machines knives, died recently at Galt. He was in his 63 year and was a well known figure in financial circles, being a director of many industrial firms in Ontario.

Pilkington Bros., (Canada), Ltd., St. Catharines, Ont., have been granted a federal charter to absorb the business known as Pilkington Bros., Ltd., and to manufacture and deal in sheet and plate glass. The new firm will also manufacture all kinds of varnishes, oils, fillers and other similar products. Capital $2,500,000.

The Pembroke Plywood Co., Pembroke, Ont., manufacturers of all kinds of veneer and plywood, report a growing demand for their product. This plant is well equipped and they employ the latest methods in producing high class built-up stock. Ample stocks of good maple and birch in their neighborhood enable the company to place on the market an all-round attractive product.

The Summerland Lumber Co., Mincola, B. C., are preparing plans for the erection of a $40,000 box factory at Summerland, B. C. At present, the company are operating at Mincola, B. C., but will move their plant and equipment to Summerland when the new building is completed.

Stratford Frames & Novelties, Ltd., Stratford, Ont., are

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The largest publishers of technical papers in the British Empire, printing in Toronto, Winnipeg and Vancouver. Proprietors of MacLean Building Reports Limited.

preparing plans for a new factory. The building will be one-storey, 46 x 200 ft. of steel and brick construction and will cost in the neighborhood of $21,000. A separate boiler house will also be erected.

Perkins Glue Co. Ltd., Lansdale, Pennsylvania, widely known manufacturers of glue, have again increased their manufacturing capacity, owing to general good conditions. Word from their sales office at South Bend, Ind., states that the demand for their product is exceeding the sales of any other year in the history of the company.

Henry Peladeau, Ltd., Ontario St., Montreal, Que., have installed a complete A-7 hardwood flooring outfit, as manufactured by the P. B. Yates Machine Co., Hamilton. The A-7 is credited with producing on hardwood a glossy, soft-finish, clean cut surface without knife marks.

The mid-winter furniture exhibition opened at Grand Rapids, Mich., on January 1 and will continue until the 21st of the month. Secretary C. B. Hamilton, of the Grand Rapids Market Association, reports that a total of 507 lines will be shown and that around 2,500 furniture buyers from all over the Union will visit the displays.

Salesmen of the Oliver Machinery Co., widely known manufacturers of woodworking machinery of Grand Rapids, Mich., gathered together recently in that city for a three day convention. The purpose of the gathering was to acquaint the sales staff with the new and improved equipment and methods developed by the Oliver Machinery Co.

Terry & Gordon, Ltd., Toronto wholesale lumber dealers, have sent out notices to the trade announcing the withdrawal of A. E. Gordon from the partnership. H. J. Terry, A. S. Nicholson and A. E. Cates, will continue business on the same lines as heretofore, but subject to a change of company name. Mr. Gordon has organized a new business to be known as the A. E. Gordon Lumber Co., wholesalers and exporters of all Canadian softwoods and has opened offices at 705-6 Confederation Life Bldg., Toronto.

E. M. Grove, age 49, prominent Galt, Ont., manufacturer, died suddenly at Waterloo recently, where he was taking part in a curling match. Deceased was well-known in furniture circles, both retail and manufacturing. Upon leaving the Adams Furniture Co., Toronto, about eight years ago, of which he was assistant manager, he formed the Grove Bedding Co. At the time of death, Mr. Grove was manager of Narrow Fabrics, Ltd., Galt, makers of upholstery fabrics.

The Bigelow-Cooper Co., Bay City, Mich., well-known manufacturers of northern hardwoods, have recently amalgamated with the Kneeland-Bigelow Co. and Kneeland, Lunden & Bigelow Co. The consolidation will be operated with the present officers and management under the title of Kneeland-Bigelow Company. The extensive timber resources and manufacturing and distributing facilities of the combined interests will promote a highly developed service to the benefit of their patrons.

R. J. Simpson who was formerly managing-director of the Arnprior Cabinet Co. Ltd., and R. H. Meagher, who was formerly superintendent and treasurer of the same company severed their connections to operate the Canadian Public Booth Co. Ltd. The factory they occupy was built a few years ago by the late Senator Edwards; it is of brick and concrete and one of the most modern wood-working plants in Canada. The company intend to manufacture office furniture and fixtures. The plant is running and shipments will be made this month.

John Fenderson & Co., Inc. Sayabec, Que., are installing a complete A-7 hardwood flooring outfit. This company is also installing a twin vertical resaw. The above machines are products of the P. B. Yates Machine Co. Ltd., Hamilton, Ont.

T. H. Hancock, Limited, Toronto, Ont., are adding 5 Class D Units to their battery of Sidman lumber curing kilns, and extending their Sidman system of kiln car storage for green and dry storage so as to take care of all lumber to be dried with only one handling. It is also their intention in the near future to add two more storeys to their mill.

Gilpin Bros., of Wiarton, Ont., well known manufacturers specializing in stuffover frames, have recently purchased the plant which was at one time owned by the Seaman, Kent Co., hardwood flooring manufacturers, and will in the near future operate this plant instead of the one now occupied by them. Gilpin Bros. are also making a new ladder known as the "Handy Two-in-One."

The Art Emporium, Kenora, Ont., has recently taken over a store for upholstering, repairing and repolishing furniture, and plans to deal in antique and semi-antique furniture. The firm also intends to establish a factory for the production of upholstered furniture of the best grade.

Basswood For Toys

Basswood is highly valued by toy makers because of its good working, staying, and finishing qualities, both for toys made entirely of wood and for the wooden parts of metal toys. Among the most common toys are wagons and buggies, in which basswood is used for the bottoms. Other toys in the same class which use much basswood are sleds, automobiles, and wheelbarrows. Hobbyhorses and small toy animals of various kinds are other products made largely of this wood, as well as toy boats. Toy pianos and doll houses are usually of basswood, which is also the favorite wood for toy cannon and popgun stocks because it is easily bored and turned to shape. Basswood is very largely employed in the making of toy blocks of various kinds, because it is so easily worked and takes printing well.

Toy manufacturers generally purchase a combination of No. 2 common and better grades from which they cut the pieces of different sizes and quality for their needs. They use much thin lumber, such as for the box boards of toy wagons and wheelbarrows, and they are able to utilize the material very closely, even though considerable clear stock is required, because of the very large variety of products manufactured. Some firms use the waste from the manufacture of of other articles, such as piano and organ keys. However, since toys must ordinarily be produced at low cost, the general run of small and odd-sized pieces of waste from other factories can not usually be employed at a profit, because of the added expense of labor in working it up. Toys are generally manufactured in large quantities by machinery, and the production would be seriously reduced by the use of much small material of various shapes. Some firms using basswood for other articles utilize their own waste by conveying it into such toys as can be made to advantage from the sizes they have available, and this can often be done at a considerable profit.

Yellow poplar is also used in toy manufacture, but where it is to be left unpainted the color is considered not so attractive as that of basswood. White pine is also put to the same use but is not so desirable, because it splits more readily. On account of its limited supply and the advancing prices on basswood and its common substitutes, toy manufacturers are constantly seeking a suitable new substitute.

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The Peter Hay Knife Co., Ltd.

Manufacture the Best
PLANER KNIVES and CUTTERS
OF ALL DESCRIPTIONS
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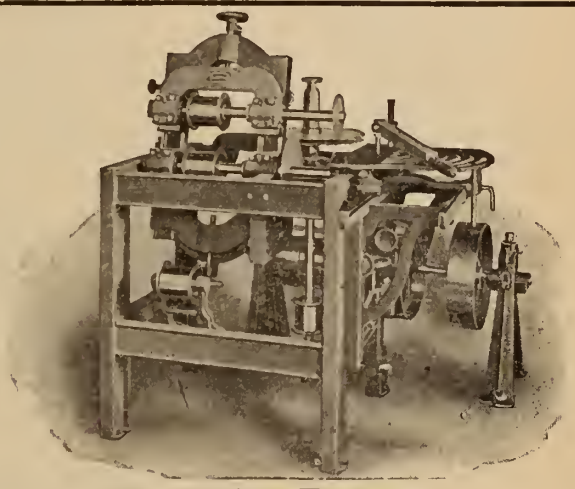

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Fitted with five saws, has replaced cutter head machines; for all jointing and halving in wood shops and for automobile and carriage wood-work it is the best machine on the market.

Much door, window, sash, furniture and cabinet work is done with this machine where a nice, smooth tenon is required. It is also used for the halving and jointing of stock at any angle.

Tenoners equipped with flexible coupling for direct motor drive or for countershaft.

No. 19. Small Saw Tenoner.
No. 20 Large Saw Tenoner.
No. 21 Regular Bevel Saw.
No. 22 Large Bevel Saw.
No. 23 8½ Irregular Dresser.
No. 24 6" Irregular Dresser.

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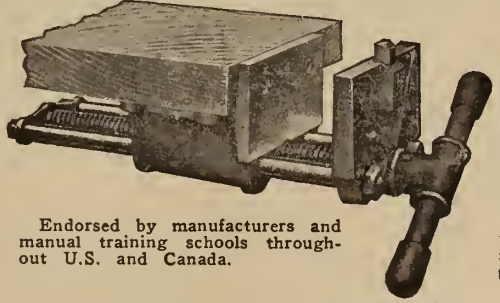

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No. 430 Rapid Acting Vise for Woodworkers. Quarter turn to left allows front jaw to slide in or out (maximum ten inches.) To tighten simply twist to the right and work is held with a strong firm grip.

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UNEQUALLED FOR STRENGTH AND DURABILITY
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For Sale

One Goldie & McCulloch three-side matcher. Reason for selling installing a four-side machine. The Houston Co., Limited, Tweed, Ontario. 1

For Sale

Combination Woodworker—consisting of Saw Table 12" x 14" rip and 10" cut off Saw—12" Jointer slotted two sides—22" Band Saw 3/8 x 7/8 Saws—Fellow Rounder with cutters—Chuck for boring with table and bits—all necessary fences and guards—3 belts.—In good condition. Just the machine for carpenter or repair shop. A. E. Smith, Cataraqui, Ont. 1

Want Partner—rent or sell, complete installation for a good business. Not much capital required. Easy arrangement. General Woodworks, Kamsask, Sask. P.O., Box 270. 1

Wanted

1 Triple Drum Sander.
1 10" 4 sided Moulder..
1 Panel Raiser.
1 Power Door Clamp.
Give full particulars and lowest price. Box 87, Canadian Woodworker, Toronto. 2

Wanted

A good used Mattison Lathe. Must be in fine condition. Apply E. Kobe, Box 257, Hanover, Ontario. 1

For Sale

A small Planing Mill and Sash and door Factory in St. Catharines. Apply Ed. C. Nicholson & Son, St. Catharines, Ont. 1

For Sale

"Whitney" 30" Single Scraping Machine, complete with grinder, countershaft, and extra set knives, $1400.00. Machine has seen very little service and is in the best of condition. Box 93, Canadian Woodworker, Toronto. 2

Sash and Door Factory for Sale

DUVERNAY STREET, MONTREAL —In the heart of the City, within 100 yards of Lachine Canal and both Railway yards. A two-storey brick encased building, mill construction, containing 21,393 sq. ft. floor space, with 12,000 sq. ft. shed storgae space additional. Light on all sides. Sprinkler system throughout. Dry kiln. Elevators, 2—125 H.P. Leonard H.R.T. Boilers, 150 H.P. Wheellock horizontal steam engine. At present equipped as Sash and Door factory, but suitable for most any manufacturing purpose. For particulars apply to the
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Band Resaw, Connell & Dengler, 54 and 60 inch.
Band Rip Saw, Yates No. 281.
Circular Saw Mill, Hoosier Pony.
Circular Resaw, 30" and 44".
Dowel Machine, Clement.
Dowel Gluer and Driver, E. B. Hayes.
Jointer, Falls Machine Co. under cut 24".
Jointers, 12", 16", 24".
Jointer, Diehl, Continuous Feed.
Lathe, Back Knife, Clement 40".
Matcher, American No. 229 hardwood.
Matcher, Berlin No. 94, 15" x 6".
Moulder, Woods 10 and 12" inside.
Moulder, American 7" and 10" 4 side.
Planers, all sizes, single and double.
Sander, endless bed, 48" H. B. Smith.
Sander, Moore Machine Co. belt.
Sanders, Berlin 36", 42", 48" and 60".
Sander, Clement Belt roller table.
Saws, Berlin Double Cross Cut.
Woodworking Machinery Co., of Buffalo,
54 Mechanic St.,
Buffalo, N. Y.
10 T.f.

To Bridge Golden Gate?

J. B. Strauss, one of Chicago's best known civil engineers made public his plans for the erection of a bridge across the Golden Gate of San Francisco, which he has drawn up in conjunction with M. M. O'Shaughnessy, San Francisco's city engineer. Hitherto the bridge, the central span of which will be no less than 4,000 feet in length, has been looked upon as merely a wild flight of the imagination. But recent advances in engineering and bridge design have been so great that the proposed erection is now a practical proposition. If erected, the structure will be the greatest in point of magnitude and span in the world.

More Skyscapers For Chicago

Three massive skyscrapers, towering high above the tallest of Chicago's present office buildings, were projected here recently. Permission to erect the tallest church building in the world was obtained from the city council by Chicago Methodists. The new building, to be erected near the centre of the downtown business section, will rise to a height of 556 feet.

The regulation height for Chicago skyscrapers has been limited by the city council to 400 feet. Lifting of the restriction in this case is expected to open up a new era of skyscraper construction.

The new Chicago Tribune building will soar to a height of 650 feet if the board of aldermen will dispense with the 400-foot rule, Tribune authorities announce.

Plans were also laid for a new federal building 27 stories in height and occupying an entire block. This structure would be taller than any present building in Chicago, and the most colossal government building in the United States. The new federal building will be built at a cost of $15,000,000. It would house all federal departments, now scattered in various buildings about the city.

Soviets Repair Railways

The Rigasche Nachrichten, one of the leading German papers in the Baltic States, asserts the Soviets are feverishly repairing their railways on the western front, so as to re-establish direct communication between Russia and Germany by way of Lithuania. A double track railway is being rebuilt between the port of Libau and Moscow via Minsk, in West Russia, northeast of the old Polish border. This road will carry German freight trains. The bridges are being strengthened and a new signal system, like that in Germany, is being established by the Soviet Commissariat of ways and communications.

Another Ford Plant

The Ford Motor Company has closed a deal for a seventy acre tract of land at Hegewisch, on the Calumet river, and Nickel Plate railroad, where the company expects to build an automobile manufacturing and assembling plant, employing 16,000 men and costing $6,000,000 when completed. The first of four units of the plant costing $1,500,000 and employing 4,000 men, will be in operation next May.

Make Your Factory Fireproof!

With Gypsum Board and Plaster

THE very nature of the furniture manufacturing business lays open the manufacture to serious and sometimes fatal loss by fire. Yet how many manufacturers can really say that their buildings are fireproof? Can you? Supposing a fire broke out in your finishing room, could it be confined to that one spot?

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There is a Maple Leaf Saw for every type of work – one that will reduce your cutting costs.

Maple Leaf Saws are made of extra refined Razor Steel tempered by our secret process.

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Limited
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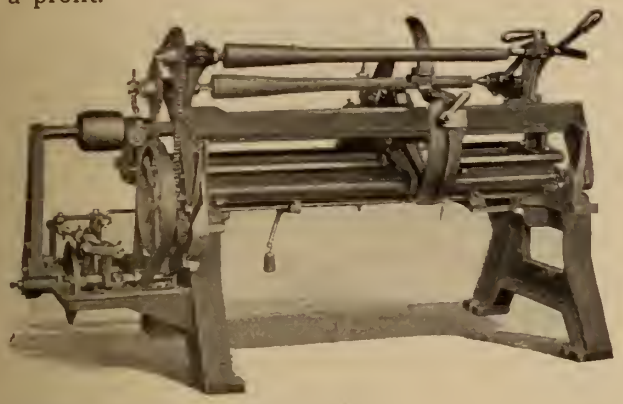

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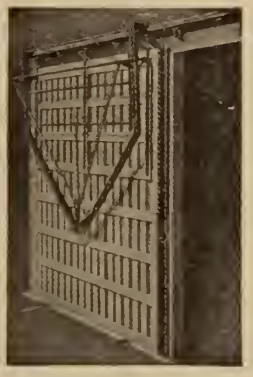

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Preston Woodworking Machinery Company, Preston, Ont.
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Simonds Canada Saw Co., Montreal, P.Q.
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McKenzie Machinery Co. D. Guelph, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS
Sturtevant, B. F. & Co., Galt, Ont.

MOTORS
Industrial Engineering Co., Toronto, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, J. Kitchener, Ont.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati. Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Morgan Machine Co., Rochester, N. Y.
Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

OIL STONE GRINDERS
Oliver Machinery Co., Grand Rapids, Mich.

PAINT
Marietta Paint & Color Co., Marietta, Ohio.

PANELS
Calhoun Plywood Co., Sheboyan, Wis.
Hardwood Products Co., Neenah, Wis.
Hay & Co., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EVANSVILLE

Carborundum Brand Garnet Paper and Cloth in the Woodworking Centers of America—

EVANSVILLE—a gem of a city set in the crescent of the Ohio River, close to the Hills of Kentucky.

A city of a hundred thousand energetic, community-loving people who believe in Evansville—a city of achievement.

With its thirty-four big plants Evansville ranks among the leading woodworking centers of America.

And in many of these plants Carborundum Brand Garnet Paper and Cloth are being used in sanding Evansville-made products.

On big three-drum sanders, on single and double belt sanders and in the hands of the expert finishers you will find Carborundum Brand Paper and Cloth helping to maintain quality standards and to keep up production.

Carborundum Brand Garnet Products are welcomed into these plants at Evansville because they are coated with North River Garnet—and there is no other garnet so sharp or longer lived. Then too, the backings and the glue used in their manufacture are of the highest possible quality and they are uniformly coated with absolutely uniformly graded grain.

CARBORUNDUM BRAND GARNET PRODUCTS
MAKE GOOD SANDERS BETTER SANDERS

The Carborundum Company, Niagara Falls, N. Y., U. S. A.

New York, Chicago, Boston, Philadelphia, Cleveland, Detroit, Pittsburgh, Cincinnati, Milwaukee, Grand Rapids

"Canadian Woodworker" Buyers' Directory—Continued

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corporation, New London, Wis.
Bury, Robt. & Co. (Can.) Ltd., Toronto, Ont.
Calhoun Plywood Co., Sheboygan, Wis.
Guelph Patent Cask Co., Scotstown, P. Q.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

REED
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

REVERSIBLE PLANING MILL FANS
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FOLLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
McKenzie Machinery Co., D., Guelph, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

SAND PAPERS
Behr & Co., Herman, Brooklyn, N. Y.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW FILING MACHINERY
American Saw Filing Machine Co., Boston, Mass.

SAW SHARPENERS
Oliver Machinery Co., Grand Rapids, Mich.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKenzie Machinery Co., D., Guelph, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Sturtevant, B. F. & Co., Galt, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEEL PLATE PLANING MILL EXHAUST
Sturtevant, B. F. & Co., Galt, Ont.

STEEL PRESSURE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Bruce Woodworkers Ltd., Chesley, Ont.
Walter & Company, B., Wabash, Ind.
Watertown Table Slide Co., Watertown, Wis.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Calhoun Plywood Co., Sheboygan, Wis.
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

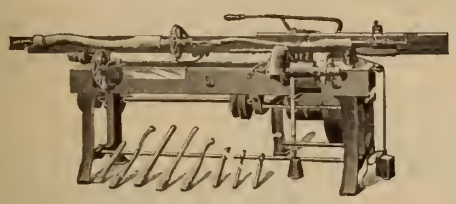
TRUCKS
National Dry Kiln Co., Indianapolis, Ind.
Oliver Machinery Co., Grand Rapids, Mich.

TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

Klotz Machine Co's
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

MANUFACTURED BY

Klotz Machine Co., Sandusky, O., U. S. A.

Write for descriptive circulars and prices.

NOW IS THE TIME

To Cut Your Production Cost by Using

"GLOBE"

ALL STEEL FACTORY TRUCKS

Made in 3 sizes :

24" x 52" 28" x 58" 34" x 70"

Globe Vise & Truck Co.

GRAND RAPIDS, MICH.

We Manufacture a complete line of

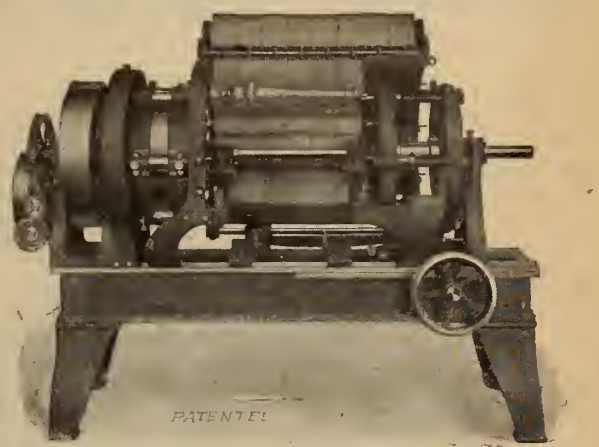
Chair, Cane-Cutting and Bending Machines

CUTS AND CATALOG UPON REQUEST

L. G. McKnight & Son Co.

GARDNER, MASS.

Present Yourself



With a NASH SANDER for your furniture turnings now and save the perfectly good dollars which are leaking out through the payroll.

It has paid for itself in other factories in less than a year.

Why not in yours?

J. M. NASH, Milwaukee, Wis.

"Canadian Woodworker" Buyers' Directory—Continued

TURNED WOOD GOODS
Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TWIST WORK
Klise Manufacturing Co., Grand Rapids, Mich.

UPHOLSTERY
Oriental Textiles Co., Oshawa. Ont.

UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Sturtevant, B. F. & Co., Galt, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Birds Eye Veneer Co., Escanaba, Mich.
Bury & Company, Robert, Toronto, Ont.
Guelph Patent Cask Co., Scotstown, P. Q.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Standard Veneer Co., Portland, Me.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER CLIPPERS
St. Joseph Iron Works, St. Joseph, Mich.

VENEER SAWS
Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENEER TAPE
Canadian Nashua Paper Co., Peterboro, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.
St. Joseph Iron Works, St. Joseph, Mich.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

VENEER LATHES
St. Joseph Iron Works, St. Joseph, Mich.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Richards-Wilcox Canadian Co., London, Ont.

WALLBOARD
Ontario Gypsum Co., Paris, Ont.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Sawmill Co., Des Moines, Iowa.
Maus Lumber Co., Chas. O. South Bend, Ind.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Walnut Company, St. Louis.
Sullivan, Frank T., Buffalo, N. Y.

WASTE
Carter, E. T., Toronto, Ont.

WINDOW FRAME MACHINE
Atlas Mfg. Co., Orlando, Florida.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Pettingell Machine Co., Amesbury, Mass.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

Speed + Perfect Joints = Low Costs

The Taylor TRADE MARK

CLAMP CARRIER
for
Small Jobs in the Big Plant
All Jobs in the Little Plant

1. Natural standing position of operator.
2. No Juggling of heavy clamps.
3. No bending or walking.
4. No pile to overturn to get work glued first—simply move clamp one section.
5. Less space than equal number of clamps with work in, piled on the floor.

Any size to suit your work. 8 and 12-section wheel type. 16, 20, 30 and 40-section chain type. 4, 5 or 6 clamps per section for stock up to 42-in. wide.

Representatives:
A. R. Williams Machinery Co., Toronto, Canada

James L. Taylor Mfg. Company
Poughkeepsie, N.Y., U.S.A.

Carving Machine Bits

POD BITS—All sizes from 5/64 to ½-inch
SQUARE END BITS—All sizes from 5/64 to ½-inch.

DOUBLE CUTTER BITS—All sizes from ⅜-inch, up.

ROUTER BITS—All sizes from ⅛-inch, up.

Made of the best material obtainable by men who have had years of experience in making this class of tools.

All styles of bits for multiple carving machines and routing machines.

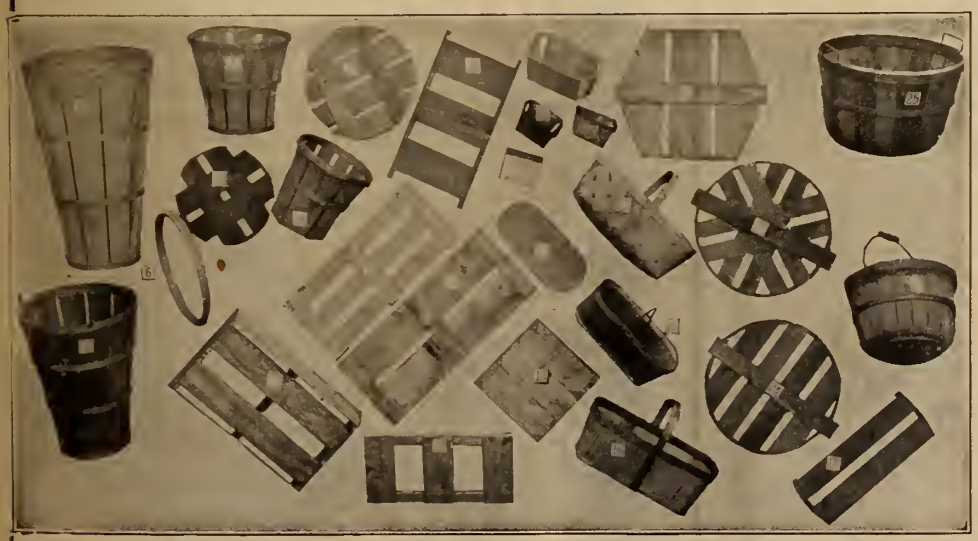
Shanks made to fit the machine you have; suitable for Victory, Lochman, Moore or Seaman Carvers.

Send for Catalogue "BC"

Independent Tool Works

Como and Marion **St. Paul, Minn.**

THIS IS THE NAME



of the Machinery for the Rapid Production of

Veneer—Crates—Baskets—Fruit Packages.

"St Joe"

Get the name fixed in your mind.

ST. JOSEPH IRON WORKS, St. Joseph, Michigan

Sturtevant

The Economies of Sturtevant Pneumatic Collecting and Conveying System

The installation of this service in woodworking plants means a saving in lubricating oils alone that will more than pay for it, besides lowering insurance rates and speeding up production.

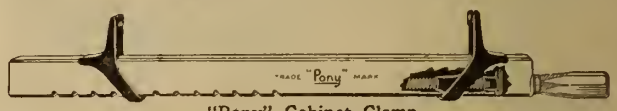
Send for folder 602 and let our sales-engineers work out a plan for speeding production and decreasing overhead.

B. F. STURTEVANT CO.
of Canada, Ltd.
MONTREAL GALT TORONTO

The "JORGENSEN"
Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws

The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."



"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

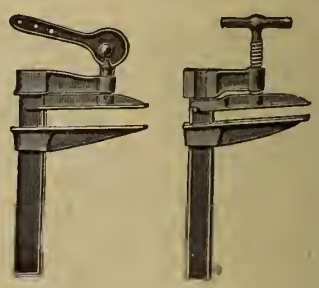
Manufactured only by the

Adjustable Clamp Company
216 N. Jefferson St., Chicago, U.S.A.

For Sale By

Aikenhead Hardware Limited .....Toronto
Lewis Bros., Limited .....Montreal

Colt's Clamps
for the
Woodworker

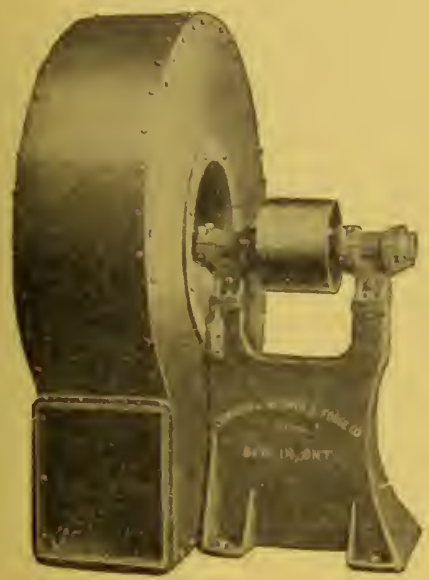


Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.
235 Centre St. BATAVIA, N. Y.



Canadian Planing Mill Exhauster

Keep your shop clean, remove your sawdust, shavings, or other loose material.

A clean shop with machines free from shavings, chips or sawdust makes for greater efficiency.

Let our engineering department help you plan your refuse exhaust system.

Write for Catalogue 400-13

Canadian Blower & Forge Co.

Kitchener, Ont.

Montreal, Toronto, Winnipeg, Calgary, Vancouver, St. John

ATKINS

STERLING QUALITY

SAWS and KNIVES

ECONOMIZE

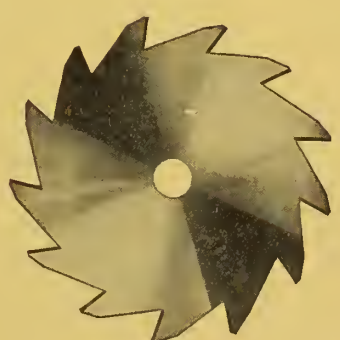
ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing

Atkins Sterling Quality Saws

and Machine Knives

Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.

Write to-day for our Knife Booklet "C.W." and Pattern Template Paper.



E.C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

A New Model to Meet Today's Conditions

WHEN you call in your designer to create new patterns, are you able to let him "go the limit" in producing artistic and attractive turnings? Or must you caution him to avoid certain features of ornamentation because you lack turning equipment capable of reproducing them accurately and economically?

Individuality of design together with reasonable price are two important elements of the sales campaigns of today.

Many manufacturers are replacing their old-style turning machines with the New Model D Mattison Automatic Shaping Lathe because it is more flexible, has greater capacity, is easier and faster to operate, and does better work—features which not only insure true reproduction of your designer's creations, but provide a lower manufacturing cost.

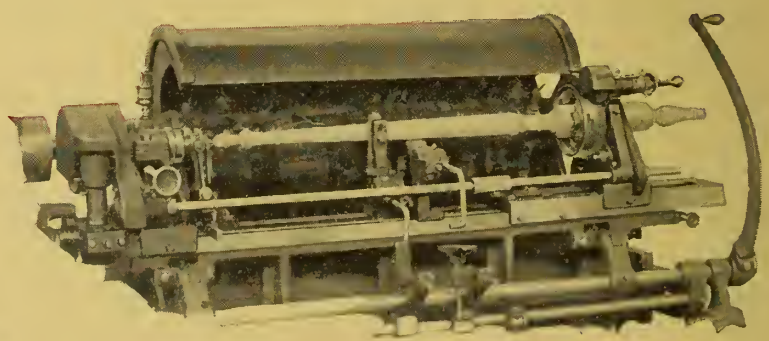
Even though you have a turning machine, you should know about this improved and refined Model D Mattison Automatic Shaping Lathe.

SEND FOR DESCRIPTIVE BULLETIN

There is only one

MATTISON LATHE

and only Mattison builds it



New Hollow Chuck Attachment

The new chuck for supporting long or slender turnings is much easier and faster to operate. It is provided with an automatic centering device which makes for quicker handling and also saves stock on many styles of turnings.

MATTISON MACHINE WORKS

Main Office and Works:—Rockford, Illinois

Branch Sales Offices:

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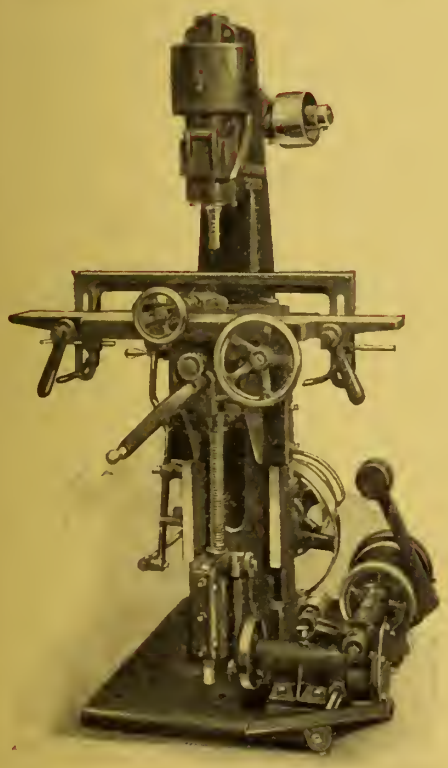
1735 Republic Building	602 Times Building	553 Monadnock Building	513 American Bank Building

Sales Representatives for New England: Baxter D. Whitney & Son, Winchendon, Mass.

Volume-Twenty Three TORONTO, FEBRUARY, 1923 Number Two

CANADIAN WOODWORKER and Furniture Manufacturer



COWAN HOLLOW CHISEL MORTISER 288

Automatic Power Feed
Lower Costs
Faster and Better Mortising

It fully meets the demand for a Power Feed Machine for sash, cabinet or other light mortising work

Highest Efficiency - *Convenient Control*

Mortises up to ¾″ square, 3″ deep.
Stroke 3¼″ or 4¼″. 18 or 24 per minute.

COWAN & COMPANY OF GALT LIMITED
Galt Ontario Canada

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MANUFACTURERS OF

MAPLE LEAF BRAND

Ethyl Alcohol—Cologne Spirits—Absolute Alcohol, B.P.
Methylated Spirits and Denatured Alcohol (all formulae)

Distributing Warehouses:—

MONTREAL TORONTO WINNIPEG VANCOUVER

SKF

Ball Bearings on Wood-Turning Lathes Maintain Precision at High Speeds

THE high speeds and accuracy demanded of wood-turning lathes make the use of **SKF** marked self-aligning ball bearings on all rotating parts an essential requirement for the maintenance of continuous high quality production.

This type of bearing offers a simple, compact mounting with ample space for lubricant, which cannot escape because the housing is oil-tight. Pinching and binding cannot occur as the self-aligning ball bearing possesses exclusively the inherent ability of adjusting its plane of rotation to compensate for misalignment and deflection.

Even after years of service, the spindles are as free from vibration as when new, for this type of bearing, properly installed, develops no discernible radial or lateral play.

As a result self-aligning ball bearings are extensively used not only on wood-turning lathes but on other woodworking machinery as well.

CANADIAN **SKF** COMPANY, LIMITED TORONTO MONTREAL

Normal View *Deflected View*

Don't let your competitors beat you on Drying Costs

Your copy of "Better Drying in Half the Time" is ready to mail as soon as you say the word. It contains the opinion of a dozen practical lumbermen and they are opinions which you can bank on, for each is based on the actual use of Cutler Kilns

HUNDREDS of lumber manufacturers have already received the new Cutler book on "Better Drying in Half the Time." Many of them are now planning to install Cutler cost-cutting, time saving, quality-assuring Kilns.

Don't wait until you begin to lose business because of your excessive drying costs. Investigate Cutler Kilns now and be prepared to equal the lowest figure your competitor can make, with a profit left for you.

The Cutler method of drying gives a three-fold saving—fewer kilns for a given footage per year, perfect drying in half the time required by other methods, and finally practically no loss from degrade, due to the patented Cutler method of obtaining and retaining correct conditions at all times.

Write for "Better Drying in Half the Time" today.

All essential features of Cutler Kilns are fully protected by mechanical and process patents granted and pending.

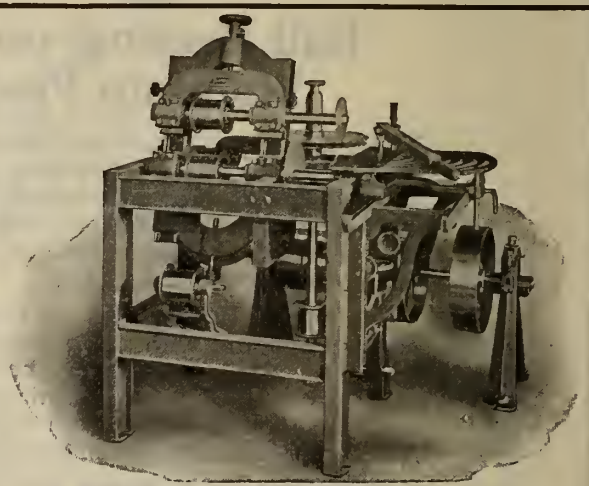
Dry Kiln Department.
CUTLER DESK COMPANY
Dept. F. Buffalo, N.Y.

Cutler
KILNS

Better Drying in Half the Time

FIBRO-KANE
PATENTED
OPEN WEBBING

NATIONAL PATENT REED SALES COMPANY
DREXEL BUILDING
PHILADELPHIA, PA.



No. 19 Saw Tenoner

Fitted with five saws, has replaced cutter head machines; for all jointing and halving in wood shops and for automobile and carriage wood-work it is the best machine on the market.

Much door, window, sash, furniture and cabinet work is done with this machine where a nice, smooth tenon is required. It is also used for the halving and jointing of stock at any angle.

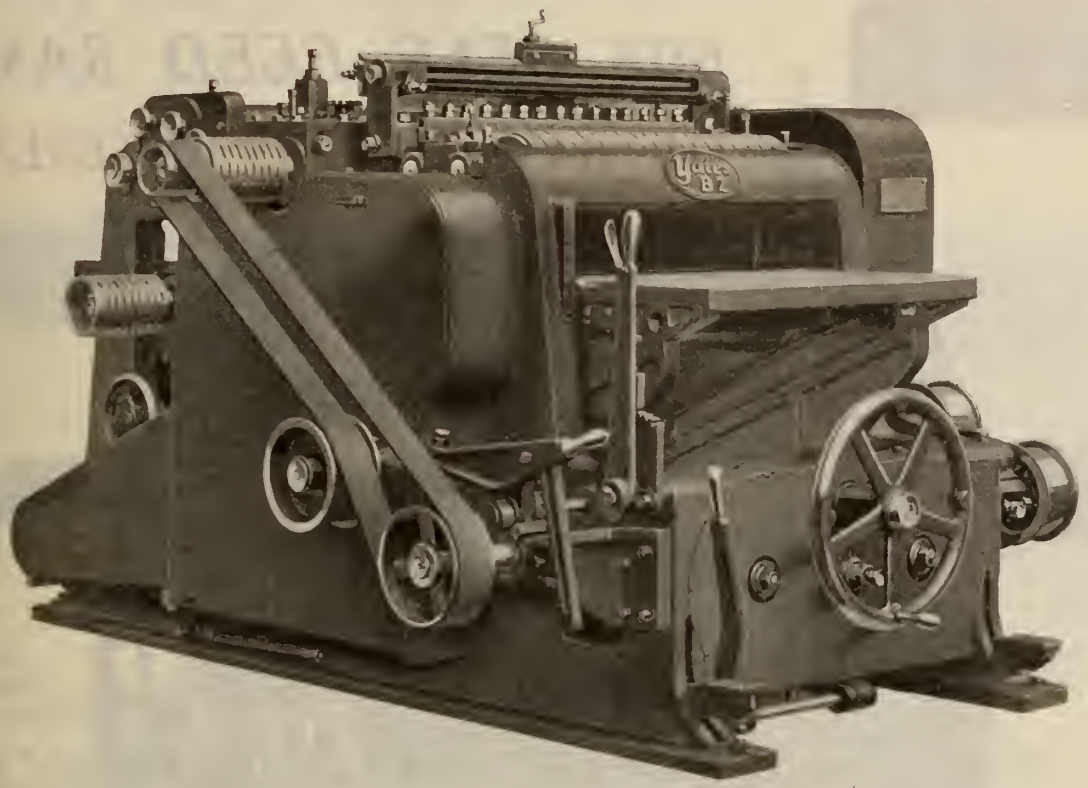
Tenoners equipped with flexible coupling for direct motor drive or for countershaft.

No. 19. Small Saw Tenoner.
No. 20 Large Saw Tenoner.
No. 21 Regular Bevel Saw.
No. 22 Large Bevel Saw.
No. 23 8½ Irregular Dresser.
No. 24 6" Irregular Dresser.

Write for Catalogue.

Pettingell Machine Co.
Amesbury, Mass.
Mention Canodion Woodworker

We also manufacture metal working machines



PRODUCES BEAUTIFUL CABINET FINISHED STOCK

Yates Type B-2 Double Surfacer is a fine investment for phonograph and cabinet factories, body plants and furniture factories. It produces beautiful cabinet finish on all class of work. Savings in sanding costs result from this fine finish.

Many owners regard this machine as the finest surfacer on the market. The B-2 is a very fast machine. Adjustments are simple and convenient. Perfect lubricating on the B-2 assures a smooth running, quiet machine under all conditions and at all speeds.

Yates Type B-2 Double Surfacer is a revelation in speed, economy and good work. When in need of such equipment, your choice most likely will be the same as that of other woodworkers. Investigate this machine now. Complete information will be sent you upon re quest.

P. B. Yates Machine Co. Ltd.

HAMILTON - ONTARIO

C.M.C.

605 SELF FEED SAW

THE SAW THAT IS DIFFERENT

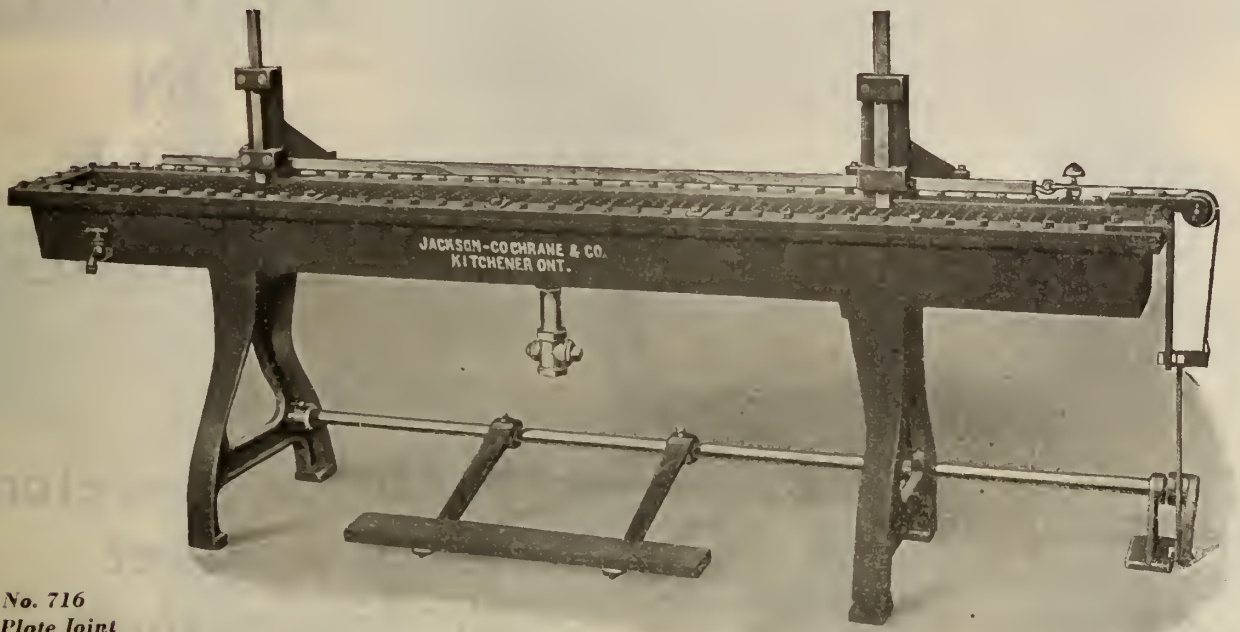
Our 605 self feed rip saw is entirely different and superior in idea and construction than any other self feed rip saw. Look over the illustration and see that—

The method of framing is stronger though less cumbrous.
The design of the split table is original and better.
The upper feed works are of new and improved design; flexible and effective
The mandrel has distinct features, that give superior cutting qualities.

No competent judge of self feed saws can possibly recommend any other saw, after examining our machine. We welcome comparison—come to Galt and be convinced.

CANADA MACHINERY CORPORATION, GALT, ONTARIO
LIMITED
GALT · · ONTARIO
Manufacturers of wood and iron working machinery
Toronto Sales Office 721 Bank of Hamilton Building

A NEW PLATE JOINT GLUE SPREADER



No. 716
Plate Joint
Gluing Machine

YOU CAN DOUBLE THE PRODUCTION OF YOUR GLUE CLAMPS WITH THIS NEW MACHINE

A thoroughly tested and tried machine that operates easily without waste or mess. It will more than double the production of your clamping equipment. This was proven when it was recently given a thorough trial in one of the largest furniture factories in the Dominion.

The method of operation is simple. The operater presses the foot lever down, forcing the perforated plate up out of the glue. Then by resting the edges of the stock on the plate and moving them backward or forward about one inch, the edges resting on the plate will be instantly and completely spread with glue. On releasing the foot lever the plate is lowered into the glue ready for the next batch of stock.

The machine is supplied with a self acting cover which raises and lowers automatically with the plate, keeping the glue free from dirt.

The machine is supplied with a self acting cover which raises and lowers automatically with the plate, keeping the glue free from dirt.
The tank is 7″ wide and 4″ deep.
Perforated plate is 5″ wide, and 1″ shorter than tank

Size	Floor Space	Weight
5′ 11″	7′ x 2′	700
7′ 11″	9′ x 2′	800

Descriptive Circular sent on request.

JACKSON, COCHRANE & CO., KITCHENER, ONT.

RUNNING IN BALL BEARINGS

Has Compensating Counterbalance with spring Grip Stop

No belts—therefore no lost power No countershaft

With the Shaftless Motor on Spindle Power is built right into Machine

Also supplied:—
501-B—Motor on Column
501-C—Countershaft on Column

No. 501-A "Lightning" Ball Bearing Shaftless Motorized Swing Saw

J. A. Fay & Egan Company

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

153-173 W. Front St. - - Cincinnati, Ohio, U. S. A.

Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.
Branches: Montreal, St. John, N. B., Winnipeg, Vancouver

Belt Sanders Speed Production

Photograph was taken at the Benj. F. Edge Interior Finish Factory, Grand Rapids, Mich., where they are turning out their sash doors, and other products faster and better because of the installation of this "Oliver" No. 183 Belt Sander.

There is an "Oliver" Belt Sander that will speed up your production and improve your product whether you make interior trim, furniture, cabinets, musical instruments or any woodwork requiring sanding or polishing.

"Oliver" Belt Sanders are built in four types. May we send you full particulars?

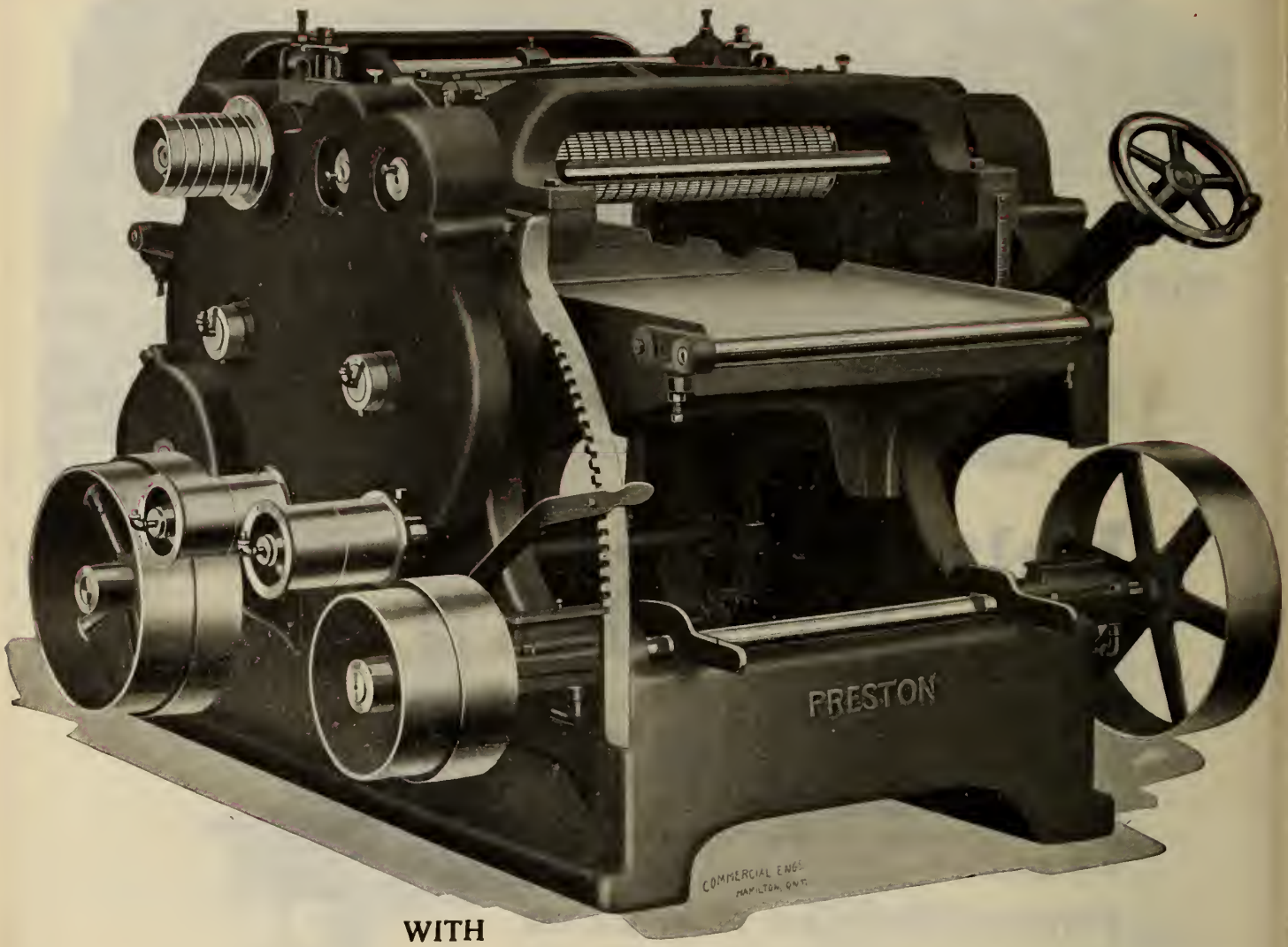
OLIVER
HIGH GRADE MACHINERY
QUALITY

Oliver Machinery Company

GRAND RAPIDS, MICH., U. S. A.

Representatives: C. A. LaVENTURE 56 King St. W., TORONTO, Ont.

No. 123 "Preston" High Speed Ball Bearing Surface Planer



WITH

(1) Specially selected S.K.F. Ball Bearings (2) Sectional Roll and Sectional Chipbreaker (3) Round Cylinder with 4 High Speed Knives (4) Stockbridge Knife Grinder and Jointer (5) Cylinder Speed, 6000 r.p.m.

Could you come to Preston and let us show you a machine in action.
We will prove that it will:—Firstly, eliminate 75% of the ordinarily necessary sanding. Secondly, increase your production one hundred fold. If it will do that, you should have it.

The Preston Woodworking

PRESTON,

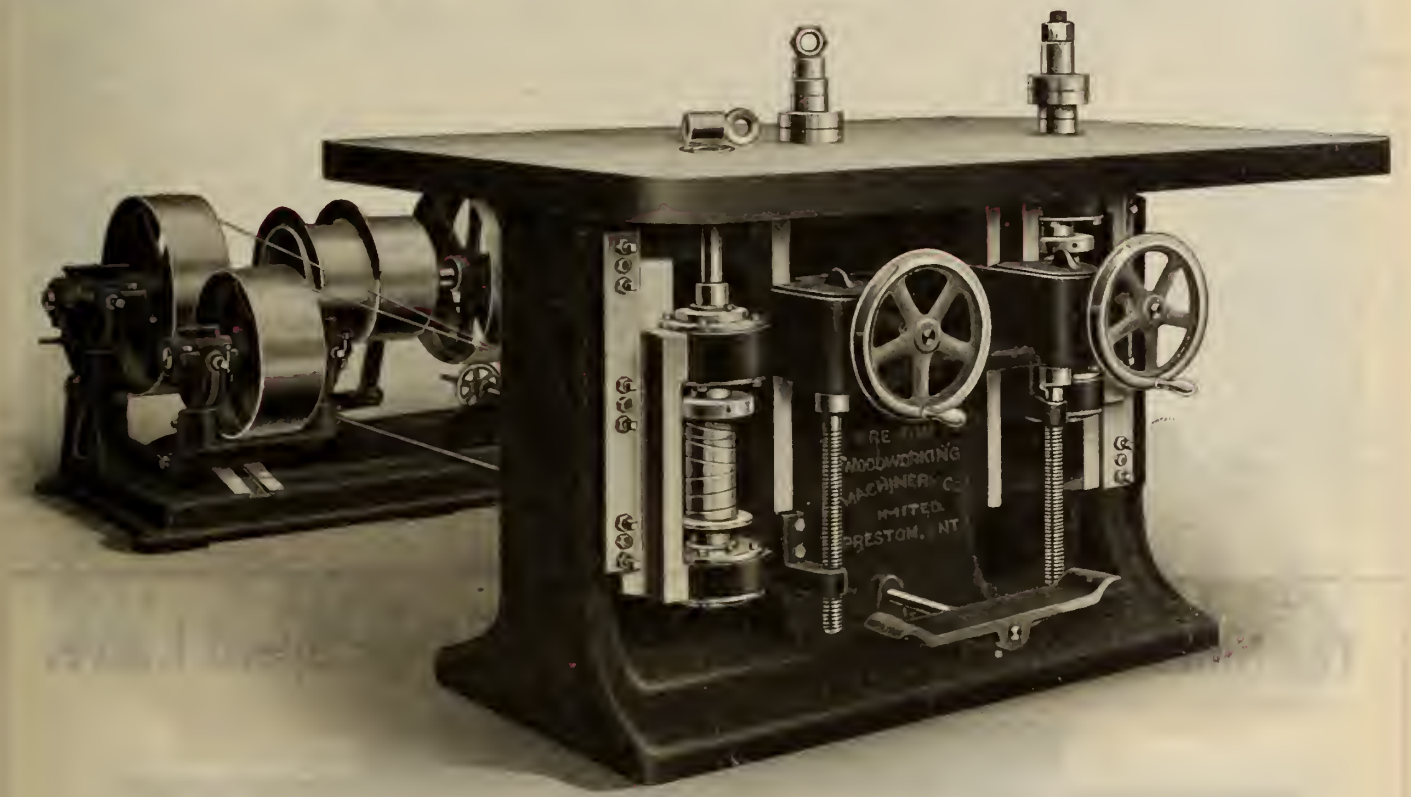
We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

? ? WHY NOT ? ?

Save $5.00 Every Day

By Installing a

Preston Heavy High Speed Ball Bearing Shaper



Built with either one or two spindles

IT WILL

1. **DOUBLE** your shaper production.
2. Vastly increase the quality of your work.
3. Pay for itself in 6 months.
4. Be much easier on your operator.

MORE PRODUCTION is the big cry in the world today
and **LABOR SAVING MACHINERY** is the only answer.

Machinery Company, Ltd.

ONTARIO

Specialists in Ball Bearing Woodworking Machinery

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The Shimer Round Safety Cylinder with High Speed Knives

A Round Safety Cylinder that will Appeal to the Buyer and the User for three Reasons:

The first is our adjusting nut for setting the knives. It is the only cylinder with properly located adjusting nuts for setting the knives, which, with our way, can be set to 1-1000 of an inch.

The second is our way of holding the knife without tapping into the head.

The third is the correct angle of cut for the knives.

Made for any of the different Makers' Machines and in Any Length Cylinder

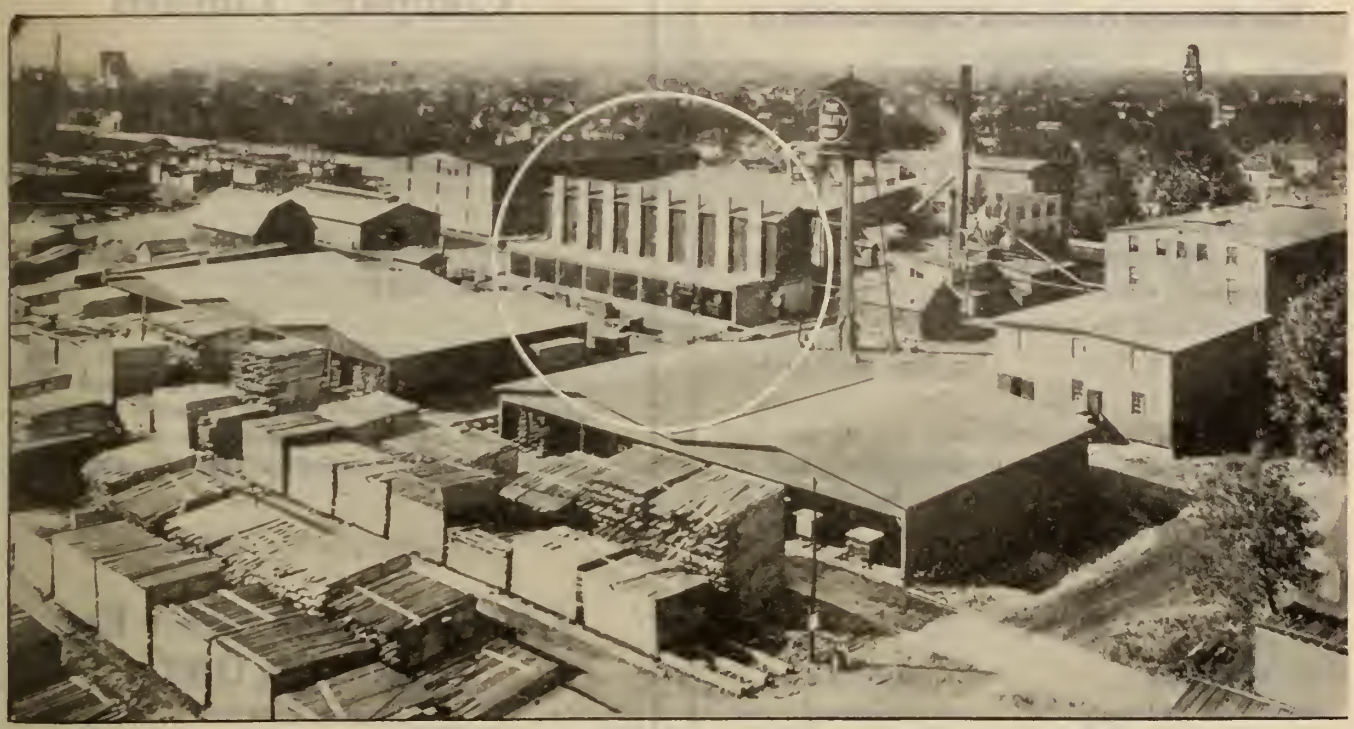
WRITE FOR PRICES

SHIMER CUTTER HEAD CO., OF CANADA, LIMITED

Manufacturers of Cutter Heads, Safety Cylinders and Grinders

GALT, ONTARIO

Another Problem Solved



by The GRAND RAPIDS VAPOR KILN

The only correct method to cure woods under varying conditions and circumstances is to first determine definitely upon the plan and then apply the treatment to the particular case at hand.

The Buckstaff Company of Oshkosh, Wis., was confronted with a drying problem when the engineers of the Grand Rapids Vapor Kiln were called on the proposition. This problem was first solved by a scientific diagnosis. Eight kilns were installed in 1914. A second and additional installation of 4 more kilns was made in 1919.

The Buckstaff Company manufactures natural wood finish caskets, and are leading casket manufacturers.

Read what Mr. J. D. Buckstaff says:

"The percentage of loss from honey comb, casehardening, cupping and checking, is exceedingly small. This is attributed to the excellent control of heat, ventilation and humidity, which after all, are the fundamentals necessary in drying lumber."

The table below shows the average time required for drying the following kinds of lumber down to 3-3½% moisture contents:

4/4	Chestnut	with	20%	initial	moisture	content	to	3%	final	moisture	content	in 5 days.
4/4	Mahogany	"	25%	"	"	"	"	3%	"	"	"	" 5 "
4/4	Cypress	"	13%	"	"	"	"	3%	"	"	"	" 4 "
5/4	Walnut	"	20%	"	"	"	"	6%	"	"	"	" 6 "
4/4	Birch	"	14½%	"	"	"	"	3½%	"	"	"	" 6 "

"The kiln equipment and engineering service rendered by the Grand Rapids people is great, also the rapidity in furnishing material and specifications is worthy of mention."

GRAND RAPIDS VAPOR KILN

Main Office and Factory, Grand Rapids, Mich.

Engineers—Contractors—Manufacturers

Western Representative: E. F. Tindolph, 1608 Hoge Bldg., Seattle, Wash.

FOREIGN OFFICES:

Boorman & Boorman, Sydney, Australia

A. R. Williams Machinery Co. St. John, N.B.

The Oliver Machinery Co. Manchester, England

Hampe & Hartwig Hamburg, Germany

The Canadian Appraisal Co. Limited

The Pioneer Appraisal Organization of Canada

Established 1905

"An adjustment of fire insurance in accordance with existing values is a universal necessity. Many people who now believe that they are properly covered against the fire risk are, in reality, inadequately covered. Morever, realization of these facts is by no means general."

The Chronicle

Over 85% of the appraisals made during the past fifteen years of Canadian manufacturing and industrial properties have been carried out by us, aggregating some 5.000. properties, and include over 250 lumber and woodworking plants.

Correspondence invited

TORONTO
Royal Bank Building

MONTREAL
364 University Street

Dominion Appraisal Company Limited

The Test of An Appraisal

"We have never been so grateful for anything we have done as for the appraisal made by you in December 1919. It certainly was worth thousands of dollars to us in the adjustment of the fire."

Port Arthur Daily News Limited

May 5th, 1921

Our staff of qualified appraisers—men with many years experience in the appraisal field—and our system of careful supervision of all work entrusted to our care has afforded protection to our large clientel extending throughout the Dominion of Canada.

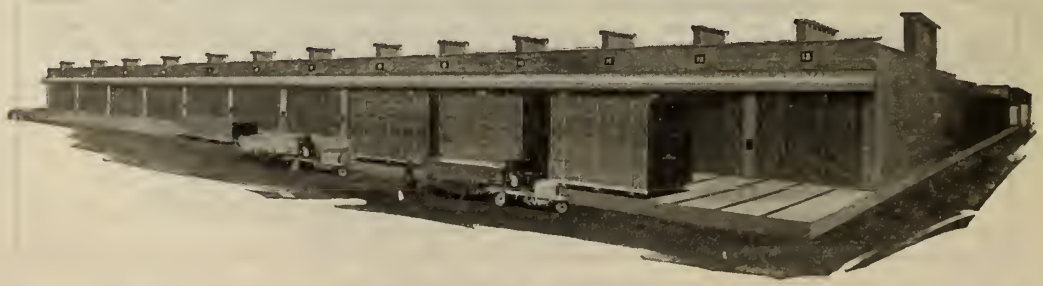
We solicit your correspondence

8-10 Wellington Street East
TORONTO, ONT.
Telephone Main 646.

Many Kilns and "new Systems" have come and gone

during the years that these have been true to the name

THE STANDARD



Get facts instead of claims—ask users—make your own comparisons—we will gladly send *our* literature—address us: 1542 McCarty St., Indianapolis, Ind.

The Standard Dry Kiln Co.

Showing Ten Distributing Points

Send your orders to us at South Bend, Indiana, for

PERKINS

183

TRADE MARK
REG. U. S. PAT. OFF.

and we will ship at once from best point shown on above map. Prompt service and uniform quality distinguishes our business and product.

Patents covering Perkins Glue have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy, and other foreign countries.

PERKINS GLUE COMPANY

Factory and General Offices:
Lansdale, Pennsylvania

Sales Office:
South Bend, Indiana

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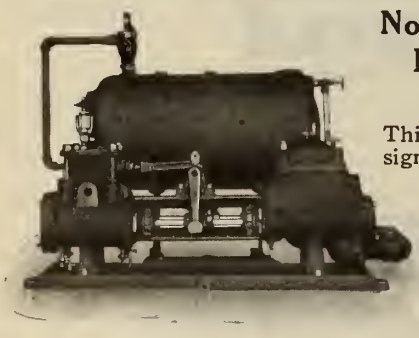
SMART-TURNER PUMPING MACHINERY



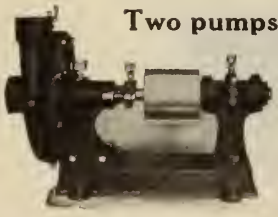
No. 153 Automatic Feed Pump and Receiver

This type is specially designed for returning to boilers the condensation from steam coils, dry kilns, etc.

THERE is a Smart-Turner machine for every pumping requirement. In the woodworking industry particularly, Smart-Turner pumps are well known for their unvarying efficiency and low upkeep.

Our engineers are always at your service and will gladly co-operate in solving your problems.

Two pumps noted for their efficiency



CENTRIFUGAL PUMP

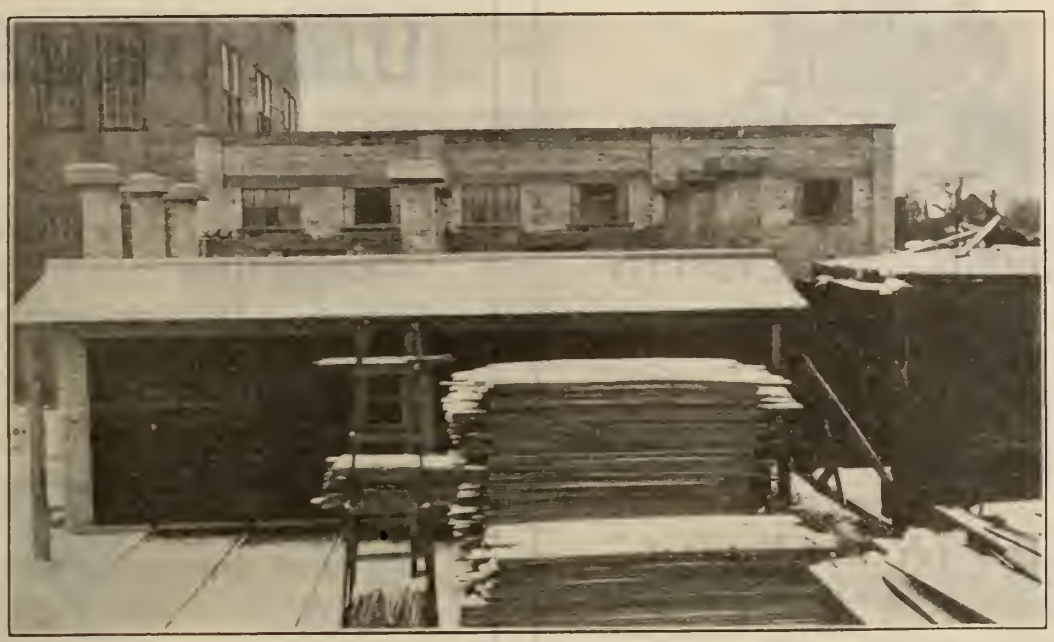
DUPLEX STEAM PUMP

H.M.W.-223 Air Compressor

A heavy, substantial machine, liberally proportioned and accurately built. It may be used to good advantage for spraying equipment in the finishing room.

The Smart-Turner Machine Company, Limited

Office and Works: 191 Barton St. E. HAMILTON, CANADA



NATIONAL Klins of the Globe Furniture Co. Ltd., Waterloo, Ont.

If you use hardwoods, you are interested in

MOISTAT

It speeds drying with absolute safety.
Drying times are reduced from 30% to 50%

Improve your kilns easily
Save on new kilns safely

Ask for new descriptive literature

THE NATIONAL DRY KILN COMPANY

1117 East Maryland Street, Indianapolis, Indiana

Branches: Albany—Memphis

NATIONAL DRY KILNS

"BAEDER - ADAMSON"

that well known line
of
Sand and Garnet Papers and Cloths
in Reams and Rolls
is now

MADE IN CANADA

Order from your jobber or the sole distributors

Canada Glue Co., Ltd.
Brantford **Ontario**

BRANCH OFFICES:
Head of Frontenac St., Montreal
16 Wellington St., E., Toronto

UNIFORMITY

When used in describing a **Cannon Glue** is more than a claim. It is an established **fact!**

We have customers in Canada who have used one brand for fifteen to twenty years without one cause for complaint.

CANNON CANADIAN CO., LTD.
TORONTO **MONTREAL**

Our Comebacks are Duplicate Orders

Manufactured by

KANE MANUFACTURING CO.

1832-34 South Clark Street **CHICAGO, ILL.**

MONITE GLUE— PRESERVES THE WOOD

Takes half as long to mix. Gives a greater spread. Sets more quickly. Average shear strength 2,641 pounds per sq. inch. Uniform quality varies less than 1% guaranteed. Improves the product, gives longer life.

Monite Sticks To Its Job

MONITE Glue is more than an ordinary glue. It actually preserves the wood.

Some of the component parts of the Monite Glue formula are recognized as the best wood preserving chemicals in the world. Experts employ them extensively for treating various articles to prevent destruction by age and exposure.

In Monite Glue is combined great adhesion and the power to resist wood-destroying fungi. Monite Glued articles are permanent. They will remain intact for centuries—cherished antiques of our great-great-grandchildren.

In addition to the long life Monite Glue imparts, it offers equally important economies in use. It is mixed cold with cold water; it is applied cold to cold wood.

If you are interested in the production of glued articles, we would like to show you how Monite Glue can be used to better advantage in your particular work.

Monite Waterproof Glue Company
1628 North Second Street Minneapolis, Minn., U. S. A.
Cable Address: Monite, Minneapolis

Canadian Representatives:
W. H. CUNNINGHAM & HILL, LTD., 269 Richmond St., W., TORONTO, CANADA
STOCKS AND REPRESENTATIVES IN ALL PRINCIPAL CITIES.

MONITE
WATERPROOF GLUE

COIGNET FRENCH GLUES

Make the Strongest and Most Durable Joints

Scientifically Graded

Each Sheet Stamped with Grade Name or Number

Uniformity Guaranteed

Stocks Carried at Montreal

COIGNET CHEMICAL PRODUCTS COMPANY

17 State Street NEW YORK CITY

Keep the GUESS out of GLUE WORK with

Mixes cold in cold water.

Economical —Spreads well.

WATERPROOF GLUE

UNIFORM STRONG HEAT-RESISTANT RELIABLE

Send for "CASCO" Manual

The Casein Manufacturing Company

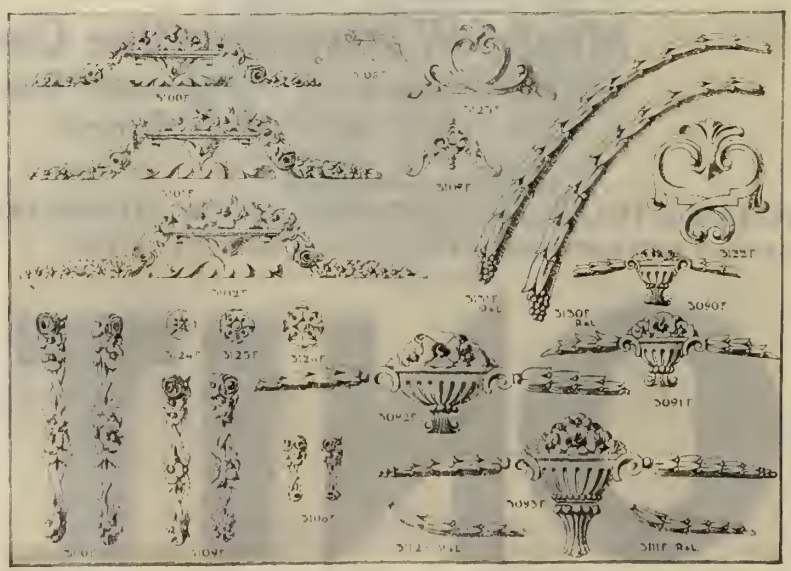
Largest and Longest Established Manufacturers of Casein Products in America

15 Park Row, New York City

Branches in Principal Cities

PERIOD CARVINGS *for* FURNITURE

Largest Manufacturers of Imitation Wood Carvings in the World Quality the Best. Prompt Shipments



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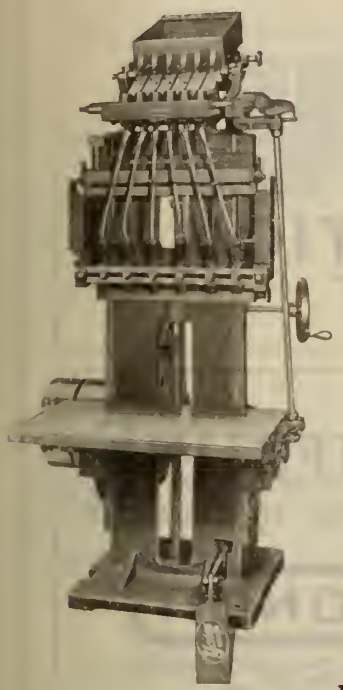

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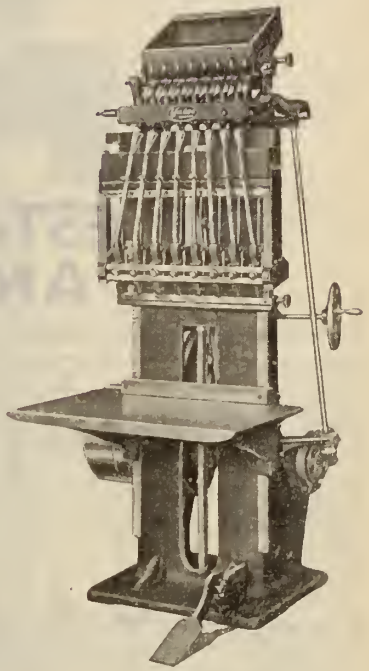
Latest improved head. Single or double row chucks. With or without clincher. Belt or Direct motor drive. Open and Closed Back types. Built in different sizes.

Upon request, we will send you complete details about these machines.



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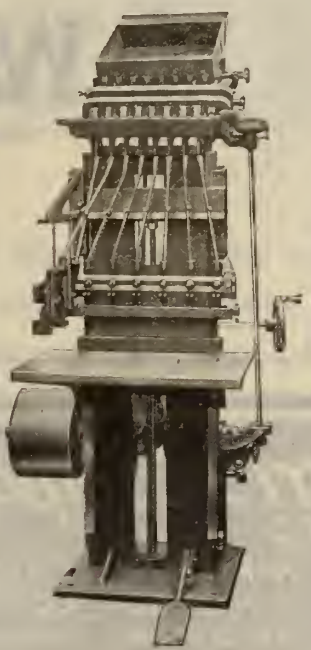
BOX NAILING AND CLEATING MACHINES

ENTIRELY AUTOMATIC

EASILY OPERATED



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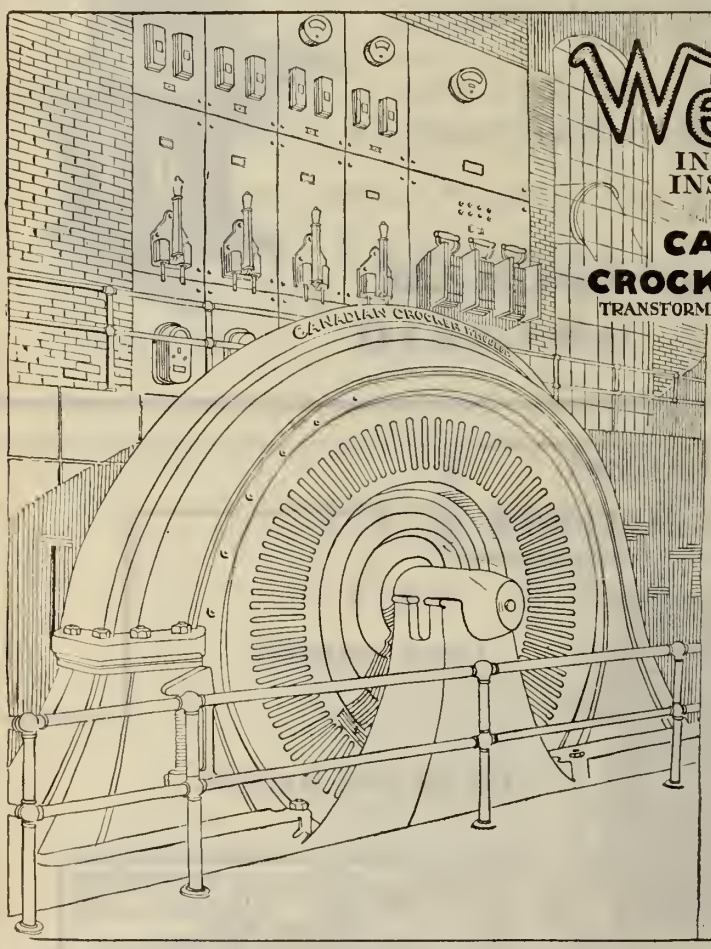

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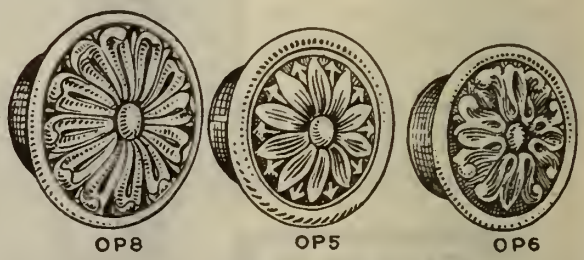

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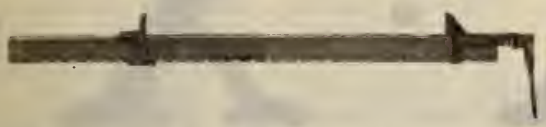

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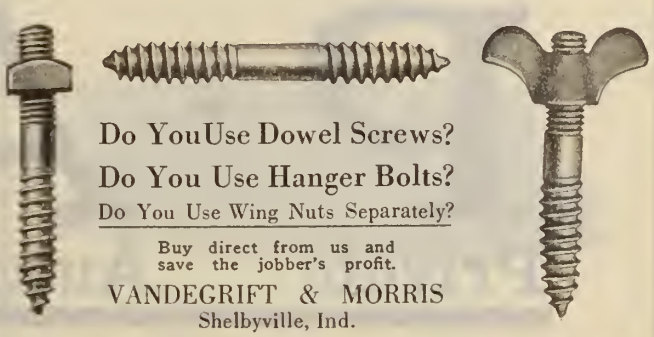

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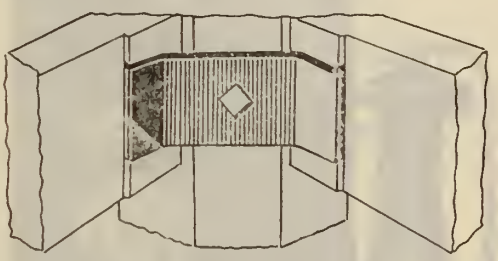

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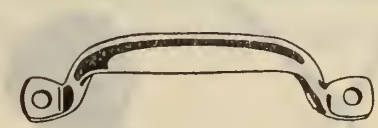

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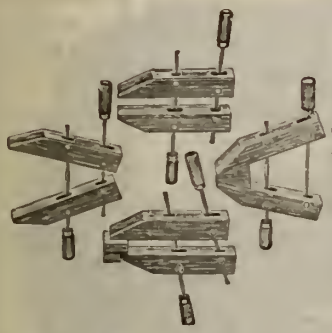
The "JORGENSEN"
Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws



The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."

"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

Manufactured only by the

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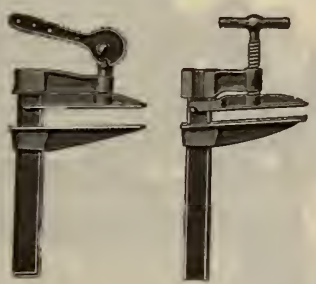
Colt's Clamps
for the
Woodworker



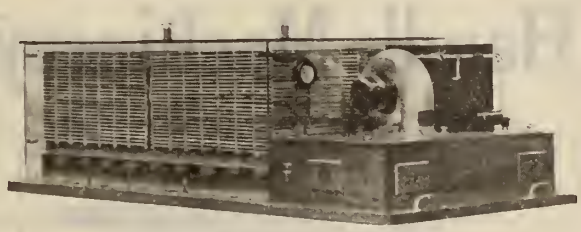
Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.



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2—Low Temperature

3—Controlled Humidity

4—Short Air Travel

The Sturtevant Moist Air Fan Kiln, combining these three requisites, speeds production, standardizes quality and increases profits.

Folder 602 is gladly sent on request. It contains information, of value to every woodworker, regarding the most modern and efficient methods of seasoning lumber without degrade.

B. F. Sturtevant Company of Canada, Limited

Montreal - Galt - Toronto

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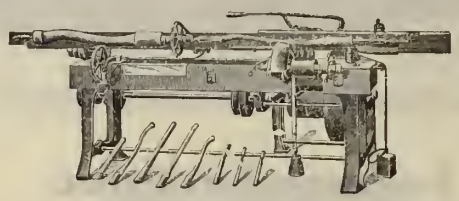
PUTS AIR TO WORK

Klotz Machine Co's
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

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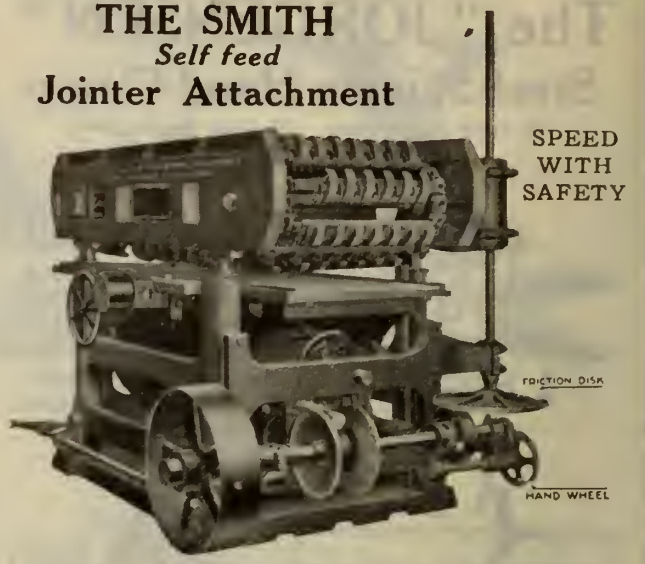
Self feed
Jointer Attachment



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We will make this attachment to fit any standard jointer or will furnish jointer and attachment complete.

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Chair, Cane-Cutting
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UPON REQUEST

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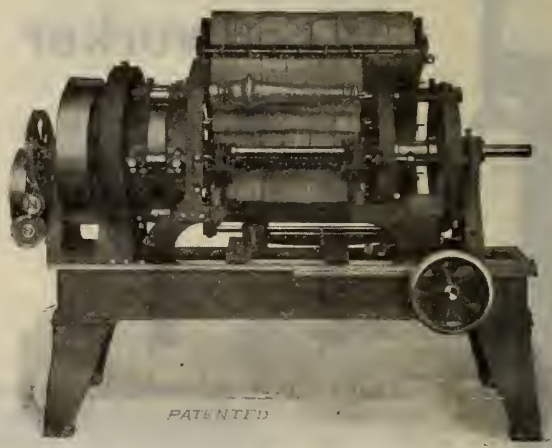

INCREASE production and at the same time improve quality, you can not do better than to install a NASH SANDER for your furniture turnings.

Put one in now and you will wonder how you ever got along without it.

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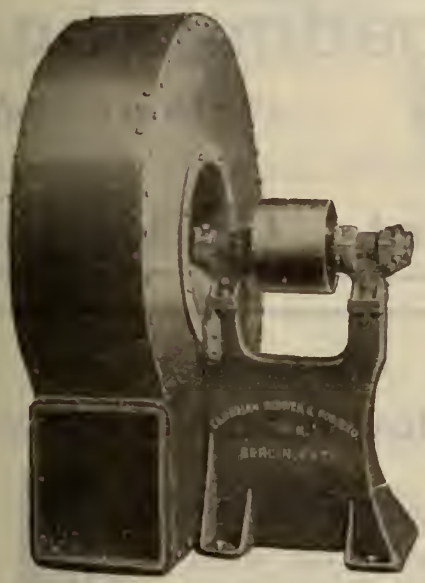

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Keep your shop clean, remove your sawdust, shavings, or other loose material.

A clean shop with machines free from shavings, chips or sawdust makes for greater efficiency.

Let our engineering department help you plan your refuse exhaust system.

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Stick to BEAVER BRAND SAWS

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Your saw repairs should be done by experts if the saw is to regain its original strength. Let us do your repairing. Be sure that name of owner appears on each saw, and mail full instructions of work to be done, stating the hand, speed and feed of mill together with shipping directions for return of saws.

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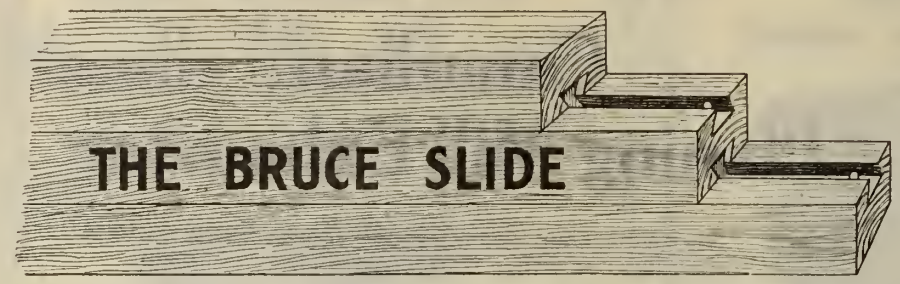

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BRUCE WOODWORKERS, Limited, Chesley, Ont.

Southern & Northern Hardwoods

High Grade Lumber and Service

RED GUM, SAP GUM
(plain or quartered)

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(plain or quarter cut)

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Window Frame Machines

This is the work ☞

Let us tell you about the machine.

Testimonials from hundreds of satisfied users.

F. V. Phillips invented and built window frame machines for 40 years. "The Phillips Line" is the culmination of his efforts.

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Regular size 24 x 48.
Stakes 30 inches high.
Centre wheels 14½ in., diam., 2 in. face.
Steel stem castor wheel 6 1/4 in. dia., 1 1/4 in. face.
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Special sizes to order.

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We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

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3	cars	4/4"	Fas.
5	"	4/4"	No. 1 Common.
1	"	4/4"	No. 2 Common.

PLAIN WHITE OAK

2	cars	4/4"	Fas.
2	"	5/4"	No. 1 Com. & Btr.
3	"	4/4"	No. 1 Com. & Sel.
3	"	4/4"	No. 2 Common.

QUARTERED RED OAK

3	cars	4/4"	Fas.
6	"	4/4"	No. 1 Common.
2	"	4/4"	No. 2 Common.

PLAIN RED OAK

2	cars	4/4"	Fas.
3	"	5/4"	Fas.
3	"	6/4"	Fas.
2	"	8/4"	Fas.
8	"	4/4"	No. 1 Common.
2	"	5/4"	No. 1 Common.
2	"	6/4"	No. 1 Common.

QUARTERED RED GUM

2	cars	4/4"	Fas.
2	"	4/4"	Fas. Fig.
2	"	5/4"	Fas.
2	"	6/4"	Fas.
10	"	4/4"	No. 1 Common.
2	"	5/4"	No. 1 Common.
2	"	6/4"	No. 1 Common.

QUARTERED RED GUM S.N.D.

5	cars	5/4"	No. 1 Com. & Btr.
5	"	6/4"	No. 1 Com. & Btr.
10	"	8/4"	No. 1 Com. & Btr.

ASH

4	cars	10/4"	No 1 Com. & Btr.
2	"	12/4"	No. 1 Com. & Btr.
1	"	6/4"	No. 1 Com. & Btr.
2	"	4/4"	No. 1 Common.
2	"	4/4"	No. 2 Common.
2	"	5/4"	No. 1 Com. & Btr.

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8	cars	4/4"	Fas.
3	"	5/4"	Fas.
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15	"	4/4"	No. 1 Common.
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5	"	5/4"	No. 1 Common.
5	"	6/4"	No. 1 Common.

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2	cars	4/4"	Fas.
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2	cars	4/4"	Log Run.
2	"	5/4"	Log Run.
1	"	8/4"	Log Run.
6	"	10/4"	Log Run.
6	"	12/4"	Log Run.

1" to 4 No. 1" Common and 1s & 2s **HARD MAPLE**
Excellent widths and lengths.
Can kiln dry and surface.
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BUFFALO *"Buy and Sell Hardwoods in this Market."*
FAMOUS LUMBER CENTER
Unequalled facilities for rapid dispatch, by Rail, Lake or Barge Canal, on all your requirements, large or small.
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R. R. May Hardwood Co.

1522 S. Sixth St. Louisville, Ky.

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Ply Wood Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. GREENFIELD, OHIO

Table Slides Table Slides Table Slides

You have tried the rest, now use the best.

WATERTOWN TABLE - SLIDE COMPANY

Watertown, Wisconsin, U.S.A.

AMERICAN BLACK WALNUT

LUMBER **VENEERS**

OUR SPECIALTY

A goodly supply of choice stock on hand at all times.

BAND MILL IN DAILY OPERATION

It will be a pleasure to figure on your requirements.
With the growing demand and the increasing popularity of Black Walnut, you, naturally wish to be prepared to meet this demand. Our suggestion is that you cover your needs early.

1/28″ SLICED WALNUT VENEERS

especially selected for quality wood and color.

LET US HAVE YOUR INQUIRIES

The Kosse, Shoe and Schleyer Co.

Lock Box No. 18 St. Bernard, Cincinnati, Ohio.

Agents in all Furniture Centres.
Branch Office: Grand Rapids, Mich.
Represented in Chicago, Rockford, Ill., Detroit, Kitchener, Ont., Canada, Utica, N.Y. New York City and San Francisco

The Gulf Lumber and Trading Corporation

NEW ORLEANS, LA.

BAND SAWN **MAHOGANY LUMBER** EXCLUSIVELY

We always carry a large stock of high grade Mahogany Lumber in all dimensions and grades on our yard in New Orleans

Your Inquiries will be appreciated **General Office, NEW ORLEANS, U.S.A**

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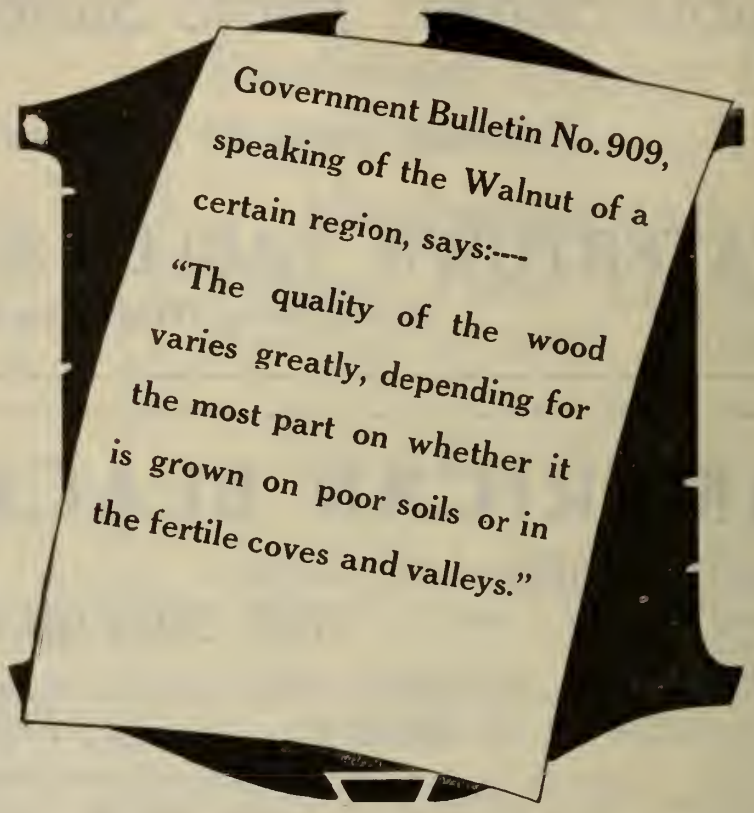
this government report



then remember

IOWA WALNUT

is grown cut from selected logs grown in the fertile river valleys of Iowa.

If fertile soil means better lumber, then it is small wonder that **Iowa Walnut** is distinctly finer in grain, and more beautiful in marking; for the fertility of Iowa's deep black soil is world famous.

These naturally endowed logs are cut in a mill devoted exclusively to walnut production, with the most modern equipment selected with special attention to the needs of walnut production and by men skilled in handling this most beautiful of hardwoods.

The resultant **Quality** of Iowa Walnut lumber and Veneers has placed them in the products of many of the leading American furniture makers. Why not in yours?

Des Moines Sawmill Co.

1021 Murphy Street
Des Moines, Iowa

Write or Wire for Quotations on this Better Walnut—It's no Higher than Ordinary Walnut

"Hartzell's Choice Walnut"

The way Walnut comes to us

COMING AND GOING

One constant stream of American Black Walnut from "Stump to Consumer" flowing through a steady, reliable and satisfactory channel.

"Geo. W. Hartzell"

Logs in the rough coming in Veneers and Lumber of the highest quality going out daily year in and year out covering a period of 35 years.

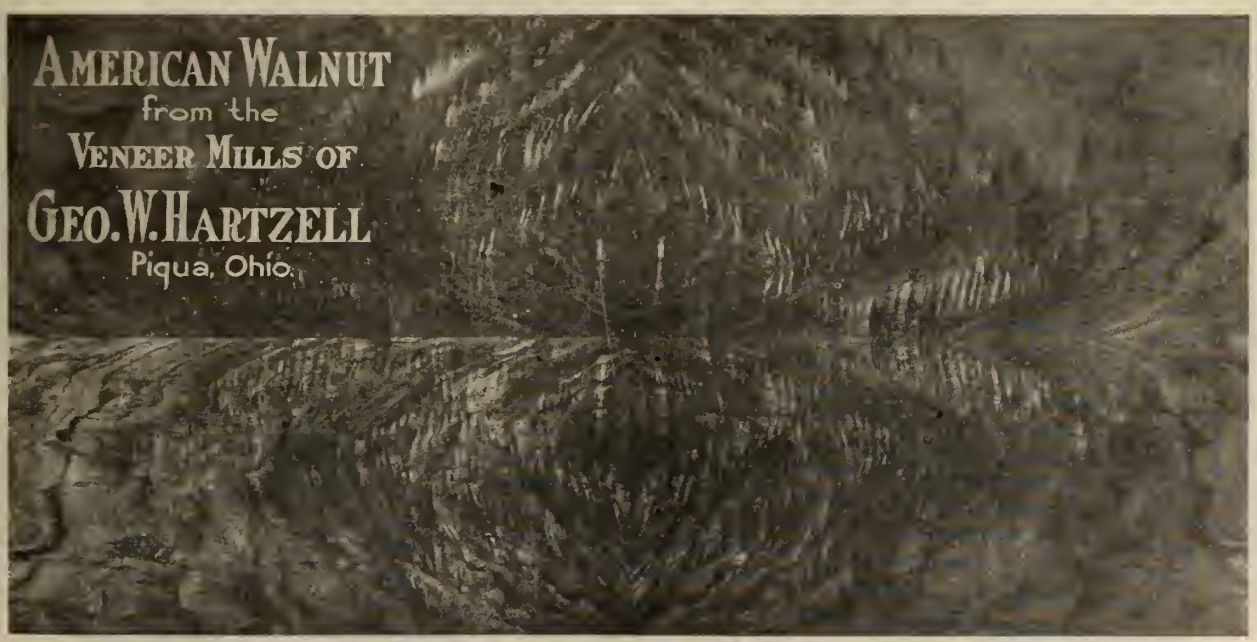
We rightfully claim your patronage because of "SERVICE and QUALITY," if there is any question in your mind about it

"Try Us and We Will Ship You the Convincer"

No Order too large, no Order too small to receive the close and careful attention it is our custom to give. That is a great part of our business, serving our customers.

"WRITE FOR SAMPLES AND QUOTATIONS"

Geo. W. Hartzell - Piqua, Ohio



The way it goes to our Customers

The Charm of an olden day surrounds this beautiful oak piece of Italian influence.
(Manufactured from Appalachian Oak by Baker & Company, Allegan, Mich.)

Greater Beauty and Economy

Chief among the many factors contributing to the superiority of Ritter Appalachian Oak for the manufacture of beautifully designed furniture and artistically constructed cabinet work is the excellent quality of the timber from which this oak is cut.

Fine, subdued grain is characteristic of Ritter Appalachian Oak. Because of this quality it is adaptable to good design; it readily absorbs finishing materials, and can be easily and beautifully finished.

Furthermore, Ritter Appalachian Oak is mild in texture, which assures economy in kiln drying, working, and finishing and affords unusual beauty in the completed product.

Write for quotations on Appalachian Oak.

W. M. RITTER LUMBER COMPANY

General Offices — **COLUMBUS, OHIO**

RITTER

APPALACHIAN OAK

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE, LA.

Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

BEDNA YOUNG'S SOUTHERN HARDWOODS

The quality and saleability of your furniture depends primarily upon your selection of hardwoods, for without good material the finest craftsmen are helpless. Play safe—always choose Bedna Young's hardwoods. Fine, figured, quartered oak a specialty.

BEDNA YOUNG LUMBER CO.

Jackson, Tennessee

From Old Kentucky

The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

Ash, Oak, Gum, Poplar, Hickory, Walnut, Chestnut, Beech, Maple, Elm, Sycamore, Cottonwood. Quotations promptly.

J. V. STIMSON & CO.
Owensboro - Kentucky
Bandmills: Owensboro; Campbellsville, Kentucky

Mercereau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern
HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of
C. W. PETERS
Vice President and Manager of Lumber Dept.

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

56 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar both plain and quarter sawed, Sound Wormy Chestnut, Cypress and Ash.

"Wire collect for prices or other information. Time is Money, delays pay no dividend."

La Tuque Turpentine

Made by an improved laboratory process from Canadian woods.

An excellent thinner for paste, colors, enamels, stains, paints and varnishes.

La Tuque Turpentine contains no free rosin.

The quality is there
The price is right

Write us for particulars

BROWN CORPORATION
56 St. Peter St., QUEBEC, P.Q.

Do You use
BASSWOOD?

Panels made from fresh cut logs are of the finest quality, and can only be made during the winter. We have new logs arriving daily. Look up your stock and order Now, so you will be sure to have the Very Best in Basswood.

AMERICAN PLYWOOD CORPORATION
New London, Wisconsin, U.S.A.

"Better Use Birch"

The Durability of Birch

Many qualities are required of a cabinet wood, but none of them is more necessary than durability. Furniture dealers know how often the question is asked regarding a suite. "How will it look a year from now?" The happy hands and feet of children are no respectors of furniture and wood less hard than birch is quickly dented and scarred.

Birch with its close grain and hard surface, takes all finishes and enamels well, and retains their original beauty for many years.

This quality makes a particular appeal to purchasers of moderate priced lines and here, too, Birch is supreme for it is the most economical of all fine cabinet woods.

The many desirable qualities of Birch are nowhere more evident than in moderate priced dining room suites. The diner illustrated is a typical example and is produced by a prominent Canadian furniture manufacturer.

Anderson, Shreiner & Mawson

Colonial Bldg., 13 King St. West, Toronto

HARDWOOD LUMBER

Mills at South River Ontario

DO YOU USE PLYWOOD ?

We specialize in—

Maple
Ash
Basswood
Panels

Write us with your requirements.

All our Panels built up with Waterproof Glue

The Pembroke Plywood Co.
Pembroke - Ont.

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited
ORILLIA ONTARIO
Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

"Lumber at first cost"

H.B. P.K
HALL BROS. LIMITED
LUMBER & TIMBER
TORONTO - CANADA

WE SELL THE BEST AND SELL IT CHEAPER

To Furniture Manufacturers

The time has arrived when costs must be cut to the bone. We are selling hardwoods that are carefully manufactured from selected stock, direct from the mill to the manufacturer.

Our mills, sorting yards and shipping facilities are the best and our service second to none.

BIRCH
MAPLE
ELM
BASSWOOD
HEMLOCK
PINE
SPRUCE

To Planing Mill Operators

The fact that we number a great many planing mills among our oldest customers speaks highly for the quality of our lumber and service. Our Hemlock, Pine and Spruce are liberally graded and attractively priced. Large stocks on hand for immediate shipment. Drop us a card and our representative will call at once.

HALL BROS., LIMITED

300 Crown Office Bldg., Toronto, Main 2806

THE PEDWELL HARDWOOD LUMBER CO.
Office and Yard
Foot of Spadina Ave.
TORONTO, ONT.

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

TENNESSEE SCENTED CEDAR

1 in.—26,200
1¼ in.— 1,800

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	48,000	5,000	112,000	200,000
1¼ in.	19,000	.....	1,000	11,000
1½ in.	6,200	.....	28,000	82,000
2 in.	7,000	.....	25,000	63,000
2½ in.	4,500	.....	4,300	3,000
3 in.	21,700	.....	6,500	4,000
4 in.	4,300	.....	900	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,600	.....	3,000	.....
1 in.	136,000	7,000	196,000	44,000
1¼ in.	26,000	800	27,000	28,000
1½ in.	24,700	2,600	86,000	42,000
2 in.	11,000	.....	22,000	40,000
2½ in.	3,000	.....	.....	.....
3 in.	1,300	.....	.....	.....
4 in.	1,500	.....	300	.....

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	70,000	202,000	1,800	9,000
5/8 in.	.....	74,000	21,600	2,000
1 in.	90,000	6,000	.....	50,000
1¼ in.	36,000	54,000	5,000	1,100
1½ in.	40,000	47,200	4,000	500
2 in.	44,000	121,000	26,000	5,000
2¼ in.	1,500	1,400	.....	.....
2½ in.	94,100	33,000	.....	.....
3 in.	5,800	19,000	7,000	12,000
4 in.	2,600	4,600	.....	.....

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
5/8 in.	.....	7,000	15,900	3,000
¾ in.	108,000	237,000	28,000	29,000
1 in.	63,000	25,000	16,200	78,000
1¼ in.	55,000	2,600	.....	.....
1½ in.	30,000	33,000	.....	.....
2 in.	26,000	54,000	7,000	6,000
2¼ in.	3,200	3,200	.....	.....
2½ in.	117,000	45,000	2,000	1,800
3 in.	10,000	41,000	2,400	600
3½ in.	4,500	5,000	.....	.....
4 in.	26,000	17,800	.....	.....

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,700	.....	5,700	500
1 in.	6,200	5,400	9,000	1,400
1¼ in.	5,900	.....	900	.....
1½ in.	.....	.....	.....	.....
2 in.	.....	.....	7,400	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	.....	.....	.....
¾ in.	3,900	.....	6,300	3,000
5/8 in.	2,800	.....	700	800
1 in.	44,000	5,300	41,000	1,700
1¼ in.	13,000	14,300	28,000	1,800
1½ in.	7,000	500	2,500	.....
2 in.	5,500	.....	23,000	5,700
2½ in.	1,000	.....	.....	.....
3 in.	300	.....	200	.....
4 in.	600	.....	700	.....

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	.....	2,500	.....	.....
1¼ in.	1,400	14,000	2,000	9,000
1½ in.	.....	1,800	11,200	3,000
2 in.	5,100	2,400	.....	4,700
3 in.	.....	.....	.....	300

QUARTERED SAP GUM

	1 & 2	No. 1C	No. 2C
4/4	.....	1,800	.....
5/4	.....	14,000	.....
8/4	.....	34,000	20,800	300
10/4	.....	8,000	.....	.....
12/4	.....	300	.....	300

POPLAR

	1 & 2 18" & up	1 & 2	No. 1 Com.	Bright Saps
¾ in.	.....	.....	600	600
5/8 in.	1,500	43,000	100	6,900
1 in.	1,100	75,000	89,000	65,800
1¼ in.	2,300	5,000	63,000	.....
1½ in.	6,300	12,000	20,000	35,000
2 in.	.....	14,300	5,000	18,800
2½ in.	.....	4,000	400	13,800
3 in.	.....	2,000	.....	21,000
4 in.	.....	1,400	3,500	8,200

Also Large Stocks of Ash, Basswood, Beech, Birch, Hard and Soft Maple.

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. **Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY**

The Modern Trend in Furniture Has Trebled the Use of BIRCH

FURNITURE may be said to have reached a "sensible" period. The finest creations of other times are being adapted to present day needs. Utility and value are demanded of every suite, veneers are less favored, solid, medium-priced furniture has the call.

No wonder Birch is being chosen. It combines every desirable quality in a cabinet wood. Beauty of grain, hardness, and the ability to take all finishes well, make it ideal from the standpoint of the manufacturer, while the price is a potent sales argument.

Panels are particularly popular and for this Curly Birch is supremely beautiful.

Clark Birch is Birch at its best.

Edward Clark & Sons Limited

807 Bank of Hamilton Building **Toronto, Canada**

EFFICIENCY ***COURTESY*** ***SERVICE***

Specialty

E C & S

Birch

OTIS
TRADE MARK

Tabasco
Honduras

ESTABLISHED 1867
INCORPORATED 1886

Laguna
Mexican

MAHOGANY

Rarely are such stores of precious wood to be found as may be seen in our yards. Across the seas from tropic lands it comes. From thick jungles where the light of day but dimly penetrates and where tangled native paths make difficult the bringing out of timber. Here the black man labors, risking life from jungle dangers, that supplies will not diminish and your orders may be filled.

Twelve million feet per year is the capacity of OTIS mills. An adequate supply is always on hand for prompt shipment. Get our prices.

Otis Manufacturing Company

Peters Avenue and The River

NEW ORLEANS, LA.

Chicago Office: Room 208, 128 N. Wells Street

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

Oak Timbers and Planking

THE MOWBRAY & ROBINSON LUMBER CO.
Office: CINCINNATI, OHIO

Canadian Representative:
A. K. Johnson, Bank of Hamilton Bldg. Toronto, Ont.

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods
White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES—that you can afford to pay
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

IN connection with our extensive hardwood operations, we wish to announce the addition of a new

CYPRESS MILL

This plant has a daily capacity of one hundred thousand feet and marks another step forward in giving our customer the highest degree of service and quality.

JAMES E. STARK & CO.
INCORPORATED
MEMPHIS, TENN.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

Mills: Coal Grove, Ohio

General Offices: 33 Rector St. New York City

GLIMPSE NUMBER TWO INTO THE HARDWOOD LUMBER OPERATIONS OF

E. SONDHEIMER CO.

CABLE ADDRESS: SONDERCO, MEMPHIS

MANUFACTURERS AND EXPORTERS OF HARDWOOD AND GENUINE LOUISIANA RED CYPRESS

BAND MILLS MANUFACTURING

GUM
COTTONWOOD
OAK
TUPELO
ASH
CYPRESS
PECAN
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ETC.

SONDHEIMER TALLULAH AND ALEXANDRIA LOUISIANA

WRITE OR WIRE FOR PRICES

BUILDING RAILROAD INTO VIRGIN FORESTS OF RED GUM AND OTHER NATIVE HARDWOODS

SONDHEIMER, LOUISIANA

OFFICES SELLING

GUM
COTTONWOOD
OAK
TUPELO
ASH
CYPRESS
PECAN
WILLOW
ETC.

N. McLEAN AND CHELSEA AVENUES MEMPHIS, TENN.

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A Permanent Lumber Service

AFTER several years of inactivity we are now cutting on our modern fully equipped mills at Manistique and Little Lake, Upper Michigan. The timber behind these mills was purchased many years ago by the Stack interests from the then "unlimited" supply. Its quality, particularly the maple and birch, is the envy of northern mill men among whom this tract is famous.

This timber will run the mills to full capacity for fifteen to twenty years. The 40,000,000 feet annual cut will run:

15,000,000 ft. maple annually
6,000,000 ft. birch annually
2,500,000 ft. beech annually
2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually

the balace in Spruce and Tamarack.

Our exceptional service, grades, and manufacture will be maintained. "Low freight rate shipments by water to Toronto, Montreal, Owen Sound, Port Arthur, and other Great Lakes and St. Lawrence River Ports. Conveniently located also for rail shipments to inland points by the C.P.R. or Soo line."

We will be pleased to hear from old friends and from new ones who can understand and appreciate what permanent connection with such a source of supply would mean.

STACK LUMBER CO.
ESCANABA MICHIGAN

97%

of Furniture and allied lines are sold on the recommendation of the Retail Merchant

In the eyes of the Consumer he is responsible

BANNING

For

Hardwoods

Oak
Ash
Walnut
Mahogany
Poplar
Chestnut
Gum

Our Prices and Values are Right

Give us a trial on your next order.

We want you to see our stock.

Canadian Representative
A. E. KLIPPERT
11 Laxton Ave.
Toronto, Ontario

KILN DRIED HARDWOODS

Kiln capacity 3,000,000 ft. monthly

WEST VIRGINIA
OAK
CHESTNUT
WHITEWOOD
BIRCH
HICKORY

We earnestly solicit your inquiries

AROMATIC RED CEDAR

ARKANSAS
RED GUM
SAP GUM
OAK
ASH
ELM

The M. B. Farrin Lumber Co.

CINCINNATI, OHIO

"We also ship air seasoned stock direct from our mills"

BELLGRADE LUMBER COMPANY

MEMPHIS, TENN.

Manufacturers

Yazoo Valley Hardwoods
Soft Textured Gum
Yellow Cypress

The name of Bellgrade stands for the best in quality, service and business practice.

	QUARTERED RED GUM
A few items of desirable dry stocks ready for immediate shipment.	4/4—fas—75 M 4/4 No. 1 Com & Sel—80 M 6/4—fas—50 M 6/4 No. 1 Com & Sel—70 M 8/4—fas—40 M 8/4 No. 1 Com & Sel—15 M

All lumber graded and shipped according to the rules and standards of the NATIONAL HARDWOOD LUMBER ASSOCIATION. Two band mills in the Mississippi Delta—annual production thirty-five million feet.

Our shipments will express our appreciation of your business

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WOODWORKER
and
Furniture Manufacturer

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Single Copies 15 Cents.

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Vol. 23 Toronto, February, 1923 No. 2

Can Furniture Shows be Improved?

Last month the furniture manufacturers of Ontario held their usual mid-winter exhibitions in Toronto, Kitchener and Stratford. The results, as far as the exhibitors were concerned, were said to be quite satisfactory, many firms recording a volume of sales greater than anticipated. Others, of course, who set their hopes on too high a plane, were disappointed as they were bound to be. On the whole, however, a goodly amount of business was recorded and manufacturers were well satisfied with their efforts.

Following these exhibits there is usually an aftermath of complaints, some legitimate, but the majority based on unsubstantial grounds or on personal grudges or ill-feelings. With the latter we need not bother ourselves, but as far as those complaints that are well founded are concerned, it is our business to analyze them and, if possible, find a remedy. These furniture shows are well established features of the trade, and although the manner of holding them and their number and frequency are open to discussion, they are regarded as necessary adjuncts to the furniture selling business. For that reason any suggestion that tends to improve their efficacy and make them the better serve their intended purpose, should be given serious consideration by both the manufacturers who sponsor the shows and the retailers who patronize them. A little co-operation, indeed, might not be a bad idea. Sometimes, the way in which things work hints that the various interests are not operating together as effectively as they might.

Objection has been taken, for example, in certain retail quarters to the fact that the furniture shown at the annual exhibitions is sold at a sacrifice by the manufacturers who find it more profitable to follow this course than to pay charges of transportation back to the factory.

It is unfortunate if this creates competition with which regular lines and regular prices cannot compete but it is a serious problem for the manufacturer. One furniture maker has said that it costs as much to transport furniture as it does to make it and though this statement may not have been intended to be taken literally, it is easy to believe that the cost of transportation and crating to and from Toronto, for instance, for the recent show, added to depreciation in value, is a very considerable item indeed. Doubtless this is one of the reasons for holding exhibitions at different centres but we can also see another advantage to the retailer in that the effect of these cut-price sales would be felt less than if all the furniture were concentrated in one point.

The situation is one that affects both manufacturers and retailers very closely and we suggest that a committee including outstanding representatives from each of the two groups could do much to improve the conditions. It is only by working closely together that the best interests of the trade as a whole will be served.

It has been a matter of frequent comment, too, that the recent furniture exhibitions were not thrown open more freely to the public. The question has two sides. Furniture is an expensive product that has to be treated with respect and there is, unfortunately, almost always an element in every public crowd that has little respect for anything. As a consequence the depreciation due to the unrestricted admission of the public is sometimes tremendous.

This is only one phase of the matter, however. The educational value of such an exhibition cannot be calculated nor the indirect sales resulting from the creation and stimulation of a public desire for better furniture. It might be a good idea to admit by tickets, the distribution of which would be taken care of by furniture retailers. This would have the added advantage that the retailer would thereby strengthen the bond between his store and his customers or prospective customers. The manufacturers, we know, would welcome any suggestion of this sort that would tend to increase sales and at the same time keep to as low a figure as possible the expense attached to displaying and the depreciation which must necessarily form a part of the process of exhibiting.

The cost of displaying furniture is high and if these periodical exhibits are to be effective the manufacturers must be reimbursed by a sufficient volume of sales. Anything that will tend to increase sales should therefore be considered but at the same time the retailers' interests must not be overlooked. Virtually both retailers and manufacturers are partners in these display ventures and it might be well to have some system of co-operation between them so that the most beneficial results will be obtained.

Some Problems of the Small Mill Man

The Small-Scale Operator is Expected to Turn Out as Good a Product as the Well Equipped Plant in the Face of Stiff Competition—How the Lower-Priced Slow Speed Matchers and Planers Can be Made to Produce Good Work

By Traveller

There are numerous small mills situated in many parts of Canada whose owners are fighting a stiff battle for existence in competition with the big fellows whose mills contain the latest type equipment that money can buy. The particular type of mill man I have in mind is the fellow who is operating a sawmill somewhere in the interior, and who finds it practically essential to dress his lumber in order to save the freight that the bigger operators are saving and thus be in a position to compete with them in some measure at least in selling their output.

In addition to this type of millman there is the fellow who is operating an average sized planing mill in a small town. Many of these are able to buy quantities of logs at reasonable prices from farmers who are glad to earn an honest dollar by taking out a few logs in the winter. I have been in plants of this kind where they have a small circular mill to saw up logs purchased in this way.

The problems of these two types of millmen then, for the purpose I have in mind, are somewhat the same. They are faced with the necessity of purchasing some sort of a planer and matcher. They are unable to consider one of the modern fast feed machines which run into some thousands of dollars. Yet they must mill their product in such a way that they can sell it in competition with the product of the large mills. This means that it must compare in quality of finish.

Large Machines Beyond Reach of the Small Man

How then are they to go about it? It seems quite an overwhelming problem. These large modern matchers, capable of feeding stock at anywhere from one hundred and fifty to three hundred feet per minute are able to do so because they carry round cylinders fitted with six and eight knives, which are kept in perfect condition by means of grinders for grinding the knives without removing them from the machines, and with jointing attachments which joint all the knives to a perfect cutting circle while the cylinders are revolving at full speed.

Equipment of this kind is entirely out of reach of the small millman I have in mind. In the first place he hasn't anything like enough work to keep one of them operating to capacity, even if he had the money to invest in one. He is not looking for a fast feed machine. He would be perfectly contended with a machine that would produce good work at sixty or seventy feet a minute. But there's the rub. When you get down to the lower-priced planers and matchers, and often the small millman is forced to be contented with a slow feed machine put out by one of the larger mills installing a new up-to-date machine, you do not get the attachments that are on the modern matchers.

The machine you will get will be a square head machine. It is probably made to accommodate four knives, but the minute you start to put four knives on it, you are in trouble. It is a difficult, and some say impossible, job to set knives on any head and get them so they will all cut in a true circle, unless you joint them afterwards. If you have no jointing attachment you are out of luck, and if only one knife out of the four is cutting, you are worse off than ever. You must slow your feed down so that one knife will give you about twelve cuts per inch, not less than that, in order to get smooth work. With a cylinder speed of thirty-six hundred r.p.m., this means your feed is twenty-five feet per minute, and this, most men will admit, is a little bit too slow in these days of speed.

Gauge for Setting Knives

However, I for one do not think the position of the small fellow forced by circumstances to be content with an old type square head matcher is entirely hopeless. In the first place while those who say it is an impossibility to set four knives on a head and get them all cutting may be perfectly right, nevertheless I believe the man operating a machine of this kind can better his equipment considerably if he will study the matter carefully. There is a type of gauge made for setting knives on a square head which should enable the set-up man to get his knives so true that only a very light touch with a jointing stone would enable him to turn out mighty smooth work at a fair rate of feed.

I have never seen one of these gauges in use, and don't even know who makes it, but it looks good in the "close-up" picture I saw of it. Roughly it consists of two hooks that hook on to the arbor at each end of the head, much the same as the hooks one sees on the end of a ladder for hooking over a line-shaft to enable a man to oil-up without being in danger of the ladder slipping, joined at their straight ends by a shaft on which are two discs. From the picture I would say the discs are eccentric and securely fastened to the shaft. You hook over the shaft and set your knives against the discs. The discs being eccentric, give the operator a chance to regulate the overhang of the knives.

This gauge is illustrated in a book called "Machine Moulder Practice." It may not be infallible, but it looks like a pretty good sort of a gauge. Of course, some operators prefer to work from the bed of the machine in setting knives instead of from the head. The objection usually made by these men is that the lips of the head are often battered up and, consequently, do not serve as a very accurate guide. The gauge I have referred to may get over this because it works from the arbor, and the arbor certainly should be parallel with the bed of the machine. This should enable one to set the knives true.

A Jointing Attachment Can be Rigged Up

If they cannot be set true in this way, it should not be a difficult matter to put a jointing attachment on the machine for both the top and bottom heads.

They have been put on some machines by men possessing some mechanical ingenuity. There is nothing really complicated about a jointing attachment. It is simply a bar placed parallel with the knives on which a holder containing a jointing stone is slid backward and forward the length of the knives. Almost any machinist could make one if shown a picture and if the purpose of the attachment was explained to him.

But before a jointing stone is used on the knives, they should be set true, because the jointing stone must just barely touch the knives. If the stone is brought too forcibly in contact, or if an effort is made to take off too much, something is liable to happen, and I for one would prefer to be some distance away from the machine.

There is another way in which two or more knives on a head may be made to cut in a perfectly true cutting circle. This is by means of a grinder which can be attached to almost any machine, both top and bottom head, providing the bottom head can be drawn out to the side of the machine. This machine is operated by electricity from an ordinary electric light socket. The grinding wheel is operated from side to side of the machine by means of a small crank. The knives are ground in rotation and each one is brought against a stop which is part of the machine. Being ground in this way, the knives do not require jointing afterwards. They are ground right in their place on the head, and thus are perfectly true. This is not an expensive piece of equipment, and is in use in a number of plants.

I think, therefore, that many of the small mill men can better the quality of their work by going into the matter thoroughly and giving it careful consideration. They should thus be able to turn out well-dressed stock at a rate of feed that will keep a man busy feeding stock into the machines.

What Babson Thinks of 1923 Prospects

The Worst of the Business Depression is Over and the General Outlook is Relatively Good—The Trend in Industrial Activity and Commodity Prices—Long Swing Tendencies

By Wm. R. Mattson
Babson's Statistical Agency, Wellesley Hills, Mass.

A study of American business conditions shows that the worst of the business depression is over. Half of the depression area was completed by the summer of 1922. Certain sections of the country, it is true, indicated their improvement before this time while other sections are still experiencing a readjustment. In the case of Canada, the indications are that we are just about at the turning point. Consequently, the outlook at present is much better than it was a year ago.

General Outlook is Relatively Good

An analysis of the probable trend of business during 1923 shows there are certain business fundamentals that are very optimistic while others indicate that a further readjustment will be necessary. The sum total of these conditions, however, is optimistic. Statistics show that a little over 55% of the area of depression is over. That means that there is still about 45% of the depression area to cover before we can feel that we are definitely above the normal line of business. Hence, the general outlook for the coming year is one of improvement rather than one of great prosperity.

During a period of readjustment, the effects of inflation are changed and a basis is made for improved business conditions. Efficiency is increased, commodity prices decline, and interest rates approach more normal levels. To a certain extent, we are now laying the foundation that will bring about true prosperity. A further analysis of the business conditions in various sections of the United States and Canada indicate that although the majority is fundamental, there is creeping in an amount of artificial stimulation that indicates danger ahead. Prices of certain goods are still fundamentally too high and are being increased by artificial means. Due to an abnormal shortage of labor in a few industries, wages have been increased out of proportion to the general wage trend. These artificial stimulants combined with the fundamental improvements in business have brought about a too rapid increase during the past six or seven months. Hence, although the general outlook for 1923 is relatively good, there are several danger points ahead that should be carefully studied and avoided if possible.

Over-Capacity of Industry

By studying the fundamental conditions in your own and allied industries, your gross profits during 1923 should increase and be greater than those of 1922. Study the manufacturing capacity of your industry. Most of our important industries developed a high producing capacity during the war years which at the present time is much heavier than necessary to supply the demand. This applies to such industries as iron and steel, tires, phonographs, and many other lines. Plant extensions should be very conservative in these industries. Failures during 1922 have been heavy and competition will continue to bring about numerous bankruptcies until this excess capacity is largely absorbed. Last year, several important business mergers were started. Excess capacity will cause a continuance of this trend toward industrial consolidation during 1923.

Because of this surplus capacity, labor troubles, a conservative demand, and other factors, many of our industries were operating far from capacity production during last year. The average manufacturing activity during 1922 was 60% of capacity. In 1921, it was about 40% while in 1923 activity should average about 75% of capacity.

In order to obtain your full share of 1923 business, you should first take into account the probable activity and spending power of Canada and the United States and also the various sections in those countries. The relationship of the spending power to the trend of commodity prices is of considerable importance. Furthermore, in order to meet competition and a possible decline in commodity prices, suffi-

cient attention must be paid to keeping down producing costs. This in turn brings us to an analysis of labor conditions, overhead costs, transportation, and the various factors in the cost of distribution.

The probable trend of the spending power of the public or the trend of demand for your goods during 1923 should be the first consideration in making plans for the year. There is still a strong tendency amongst business men to lay too much stress on the cost of production and distribution. This applies especially in determining the future price trend of your products.

As a further check on the trend of business and spending power in Canada, particular attention should be paid to what is happening in the States. It is well known that business changes in Canada lag behind similar changes in the United States. A direct comparison of these two countries shows that this lag varies from three to twelve months. A chart compiled from bank clearings in Canada and the United States with the seasonal fluctuations eliminated shows this point very clearly. In the year 1915, for example, the trend reached a low point in the United States during the early part of the year, then started slowly upward during the summer with a distinct improvement in the fall months. In Canada during that year, the trend was distinctly downward until the fall. The turn in the trend occurred during October.

It is interesting to note that over a period of years, the general trend of the two countries is the same. After the turn occurred in 1915, the business trend in the United States and Canada was distinctly upward until 1920. The high point in the United States was reached during the spring months. The trend in Canada, however, continued distinctly upward until the latter part of the year. During 1921, both countries showed a decline. In 1922, the trend in the United States reached a low point during the early part of the year and then started upward. The curve for Canada has shown a downward tendency throughout the year 1922 although the slope during the last six months was very much less than during the first part of the year. The indications are that the low point has been reached and that 1923 will show an improvement corresponding to that which has been recorded in the United States during 1922. This makes the outlook for Canada very much more optimistic than it was a year ago.

The Trend in Commodity Prices

Next in importance to the probable business trend during the year 1923 and the spending power of the public is the trend of commodity prices. In analyzing this situation, we should consider not only the outlook for the coming year, but the probable long trend outlook for commodity prices. Now what are the probable price changes in 1923? There was a comeback in commodity prices last year in response to better business. From the low point of 155 in April, the Babson industrial commodity index increased to 172 the latter part of the year or an 11% advance. Agricultural products increased in greater proportion and at present are approximately 19% above a year ago. The important factor, however, is that the great gap between these two classes of commodities is closing. Throughout the war years, and the depression years of 1920 and 1921, there was considerable divergence between these two groups. Industrial commodities during the past two years have ruled relatively higher than agricultural commodities. Both groups, however, have been increasing since the middle of 1921 and as a whole now average about 30% above the maximum point.

There is one other point. Commodity prices from August to December advanced 15% which is much too rapid for economic health. The truth is, production, distribution, and stocks were affected by the coal and railroad strikes. Buying was stimulated for protection and prices responded. We are rapidly approaching the point where artificial forces will be eliminated. Certain commodities are bound to weaken. The main points in the commodity situation for 1923 are as follows: (1) the upward swing will lose momentum, reaching a peak in early 1923; (2) there is a strong possibility of a reaction before the year is over; (3) the average price of commodities for the year will be higher than in 1922. Index figures during the next few months may be somewhat higher but this prospect does not justify heavy buying. We are in a very sensitive period. Purchases in most cases should be limited to the early part of this year. Only those products that are relatively low should be bought from the long swing standpoint.

Long Swing Tendency is Downward

From a long pull standpoint, the general trend of commodity prices should be downward. Fluctuations will occur from time to time and the increases will be largely temporary

The indications are that the termination of the present rise in commodity prices will be brought about by a declining demand rather than an oversupply of goods or a reduction in producing costs. Statistics clearly show that the spending power of Canada and the United States is better than a year ago, but it has not increased sufficiently to absorb any radical price increases.

The trend of the other fundamental factors of business indicate a good year ahead. Credit conditions will also be helped by the relatively low interest rates that are now available. 1923 should be a year of easy money and large bank reserves indicate that healthy business concerns will not be hampered by lack of credit. Furthermore, the stock market has indicated better times. The unsettled foreign situation is probably the most bearish argument in the outlook for the year. However, there are enough optimistic features that will be noticed in Canada and the United States throughout 1923 to largely offset this situation.

A Period of General Improvement

In view of these various factors, the indications are that 1923 will be a period of general improvement in business. Competition will continue keen. Prices cannot be pushed up very far because the spending power of the public has not advanced sufficiently to absorb these increases. This means that the opportunities in 1923 will be for those concerns which buy to the best advantage, produce most efficiently, and sell most economically. Hence, it is of very great importance during the coming year that a study be made of fundamental conditions, the probable trend of commodity prices, and the outlook for different sales territories—in other words, to know what and when to buy and where and when to sell.

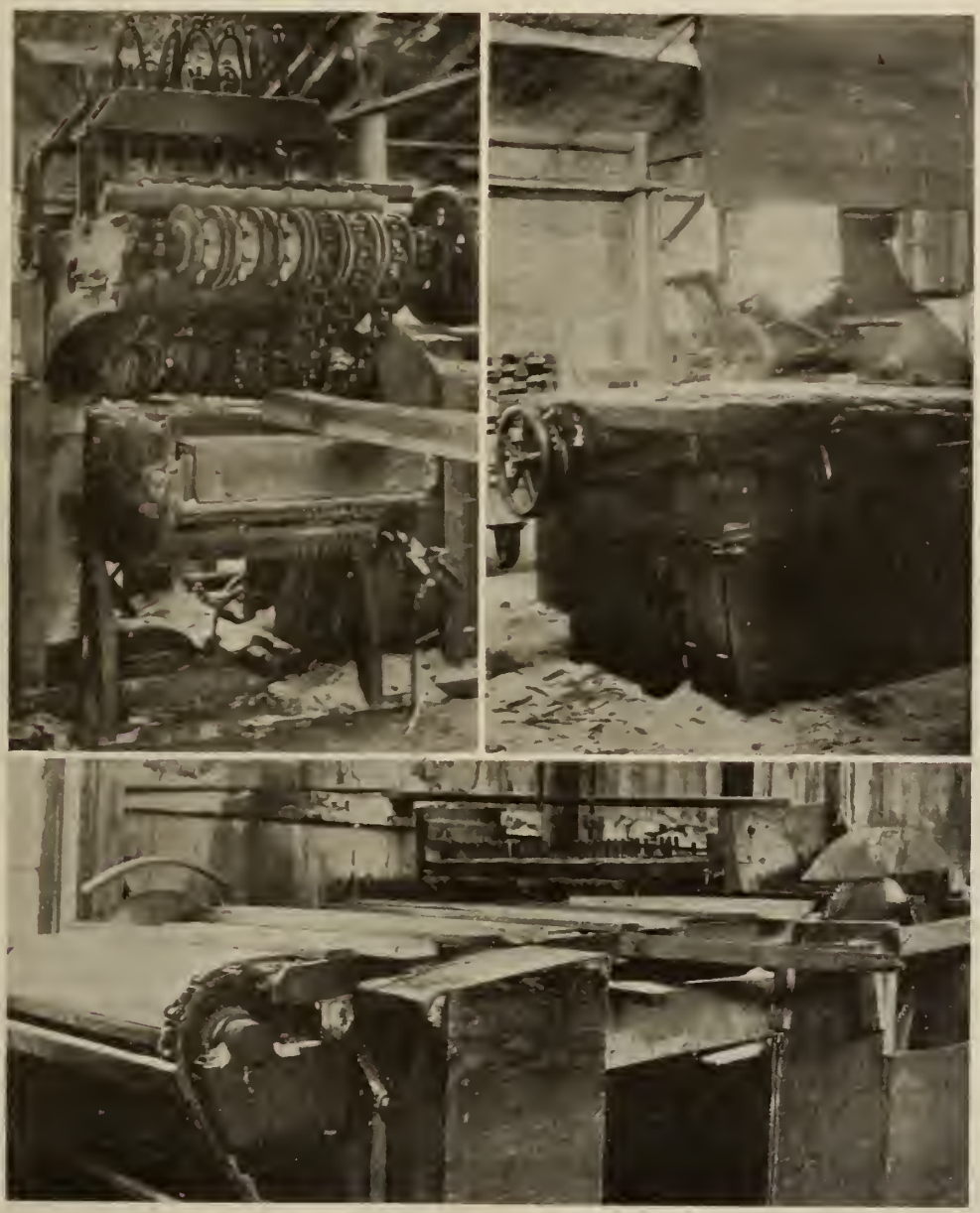
Buying a good machine lessens the repair bill of the future.

How Small Dimension Stock is Produced

The Equipment That is Needed for Utilizing Slabs and Similar Material and Converting it Into Dimension Stock is Neither Elaborate nor Expensive—Illustrations of a Plant Producing 50 Thousand Feet per Day

The three accompanying photographs, taken in a sawmill whose owners pride themselves on complete utilization of wood show that the equipment needed for the production of small dimension stock from slabs and similar material is not necessarily elaborate or expensive.

The machines shown are of the heavy, durable type suited to the needs of a mill permanently engaged in the small dimension of lumber manufacture.



Upper left—Machine for sawing slabs into short boards of the required thickness. Upper right—Band rip saw for edging the material. Lower—Automatic cut-off saw.

The machine (upper left) used to saw slabs into short boards of the thickness required, is equipped with a horizontal band saw, and a travelling bed and flexible rollers which makes it possible to saw any size or shape of slab. Slabs which will give two or more boards are returned to the man feeding, across a table at the right.

The band rip saw (upper right) used for edging the resawed material, is provided with a readily adjustable guide which the feeder may set while standing several feet back from the saw, by means of a lever. Practically any type of rip saw which could be set reasonably close to the size required would serve the purpose.

The small dimension stock is finally cut to the desired length in the automatic cut-off saw (below). The feeder places the boards on the moving bed and squares one end on the first saw. The set of stops at the second saw may be adjusted at intervals of one

inch, to crowd the pieces over to cut off to any length desired, so that the second cut is purely automatic.

Two men working each machine in succession, with perhaps the help of a third selecting suitable material from the slab conveyor, can cut practically all the small stock from a sawmill producing 50 thousand feet of hardwoods per day.

As extra space and power are available in the average hardwood mill the installation of such equipment would generally involve little increase in overhead. A highly specialized dimension mill, separate from the sawmill, is not necessary for the production of properly manufactured small wood stock of high intrinsic value and service to the wood user. The photograph from which the accompanying illustration was made was supplied by the U. S. Forest Service.

Ontario Lumber Retailers Are Aggressive

Attack Problems of the Industry With Great Vigor and Promise of Results— Costs, Apprenticeship and Grading Were Topics That Formed Basis of Keen Discussion

"The best ever!" was the universal verdict of those who attended the sixth annual convention of the Ontario Retail Lumber Dealers' Association, held at the Prince Edward Hotel, Windsor, on January 24th, 25th, and 26th. The attendance was large, the discussions were lively, the members optimistic and a feeling of confidence animated the proceedings.

Every district in the province was represented, and from the moment the convention started, the talks on the different subjects were entered upon by the retailers in a way that made everybody feel they would return home having heard something worth while.

The first topic of discussion was that of trade ethics. The chairman for this period was F. B. VanDusen, of Brockville. Mr. VanDusen's opinion was that retailers alone could not elevate the business they were engaged in unless manufacturers and wholesalers were asked to join them in inaugurating fair, common business practices. In the matter of standard grades and sizes, he said the whole industry would have to come to an understanding soon or the government would do it for them.

Safety, Insurance and Loans

An interesting paper on insurance and compensation by W. C. Laidlaw, of Toronto, was read by secretary Boultbee, which touched on many important points. Recently a 5% tax on foreign fire insurance policies was imposed but these companies had paid the tax and as a result had not encumbered Canadian foreign policy holders. Compensation was another subject dealt with fully. According to figures, the handling of material was the biggest hazard, while blood poisoning from splinters caused 19% of the accidents.

S. Hearth, of Ojibway, was the chairman of a lively discussion on financing home building. Figures were disclosed, showing how difficult it was for prospective home owners in Canada to secure the necessary credit with only a small cash investment. In the U.S.A., the chairman pointed out, there were 8,600 building and loan associations doing a business of $1,400,000,000 each year. A great deal of enthusiasm was evidenced in this subject, and it was explained by the chairman why building and loan associations were not existent in Canada. The Loan and Trusts Corporation Act stipulates that a corporation of this kind in Ontario would have to show a capital of $300,000, with $100,000 paid up. In the United States a Building and Loan Association is protected by the government with only a $5,000 capital.

A. J. Hager, of Lansing, president of the Michigan Retail Lumber Dealers' Association, was asked to say a few words on this subject, and told the retailers that if it were not for building and loan associations in Michigan, 75% of their business would be cut off. E. M. Barrett, of Ottawa, made a motion that a resolution be sent to the Provincial Government, asking for permission to operate building and loan associations and to co-operate with any other organization which looked at the matter from the same point of view as the O.R.L.D.A.

Stopping Leaks in Lumber Business

Perhaps the most lively discussion of the whole convention was the topic introduced by M. R. Bogart, of Chatham, the subject being "The Big Leak in the Retail Lumber Business." Mr. Bogart pointed out the fallacy of confusing cost accounting with price adjusting. Costs represented all the items of expense that formed the cost of operating, and any margin of profit could be added after that. He stated further that no two men could quote exact prices on bills of lumber as they did on materials in other businesses because of the lack of comparison in the different qualities of the lumber products. He added that the coming of standard sizes and grades would make it possible to arriving more closely at a uniform cost.

Several members present were skeptical about the practicability of getting retail lumber dealers to agree on a uniform cost system, but is was the general opinion that fundamental rules of cost estimating should be brought to the attention of those who were conducting their business in a haphazard manner to the detriment of the whole industry.

Accordingly, a committee, composing E. M. Barrett, Ottawa, George S. Zimmerman, Tavistock, and M. R. Bogart, Chatham, was appointed to study the best system of costs for retail lumber dealers.

Another subject that has been attracting the attention of retail lumber dealers, especially those operating planing mills and sash and door factories, is the apprentice problem. Robert Bennie, of Leamington, was the chairman for this important topic and compared the conditions of days gone by and the present in obtaining intelligent boys to learn the woodworking trade. He said that in his establishment the men engaged there ranged in age from 50 to 83, and found it difficult to obtain youths to learn the business. A pertinent suggestion was made by J. B. Mackenzie, of Georgetown, on the question. He told the members that during the last fall fair in his district he offered a prize of $10,000 for the best piece of cabinet work. The result of this inducement, said Mr. Mackenzie, was that the boy who

received second prize from the fair was entering his establishment to learn the trade.

A. Shippers' Rating Bureau was another discussion conducted by K. J. Shirton, of Dunnville, which was given much attention. Mr. Shirton said that if such a bureau was in force, much of the troubles with shippers would be eliminated.

Standardization of grades and sizes was introduced by W. M. Tupling, of Orillia. He gave personal experiences where architects specified certain sizes of material that were not economically correct. Discussion then developed, emphasizing the point that it was difficult to limit the architect in his work, as originality was the keynote of an architect's profession. However, it was pointed out by several members that where originality was not included, that a great saving could be obtained through uniformity.

The relation between wholesalers, retailers and contractors was introduced by A. R. Sanders, of St. Thomas. This discussion was a profitable one and touched on the point of how wholesalers should, in the interest of the whole industry, be careful that they are doing business with strictly legitimate retail lumber dealers.

Accident prevention was dealt with by George H. Arnott, superintendent of the Windsor Lumber Company's factory. He explained the profitable use of first aid cabinets and also drew the attention of the members to the bad effects produced by dull knives and saws which often caused the material to buck and injure the operator.

One address given that was of much interest to the retail lumbermen was on fire protection by Clarence DeFields, chief of the Fire Department, Windsor. The chief gave several examples of where inefficient fire equipment in and around large lumber yards and factories was the causes of thousands of dollars' loss to men in this line of business. He told the retailers just what fire-fighting equipment should be used for certain size businesses and how the proper care of it in the building had much to do in facilitating the firemen making a thorough job of extinguishing a blaze. He told one or two stories of how clogged-up aisles in the mills, after working hours, were the cause of loss in hindering the fire department from getting around into the corners.

Among the resolutions adopted at the Windsor Convention were the following:

Adopt System of Apprenticeships

Moved by H. F. VanDusen and R. S. Gilchrist, of Toronto, that in the opinion of this convention the members of the Ontario Retail Lumber Dealers' Association be urged to adopt a system of apprenticeship to relieve the dearth of competent workmen in the planing mill and factory branches of the business; that such system extend over a period of three years and that adequate remuneration be given such apprentices so as to ensure their completion of the course and thus relieve the present situation, and that a copy of this resolution be sent to the lumber trade journals.

Building and Loan Associations

Moved by K. J. Shirton, of Dunnville, and J. J. Cluff, of Seaforth, that we recognize the importance and value of the work that the Building and Loan Associations are doing in other places, and believe that it would be a desirable thing for our association. Be it resolved, therefore, that the secretary and directors be requested to take this matter up with the Ontario Government, looking to their permission to form such organizations and to co-operate with any other organizations which are looking at the matter from our point of view.

Standard Sizes and Grades

Moved by W. M. Tupling, of Orillia, and W. J. Aitchison, of Hamilton, that a standing committee be appointed by the president to keep in touch with the work of the General Committee in the United States on standard sizes and grades and to study this question and take action, if necessary.

Legitimate Retail Lumber Dealer

Moved by J. T. Wallace, of London, and E. M. Barrett, of Ottawa, that the following constitute a legitimate retail lumber dealer:—A person, firm or corporation carrying an assorted stock of lumber, lath, shingles, and interior trim reasonably commensurate with the needs of the community in which they do business. This Association puts itself on record as considering the following legitimate customers for retail lumber dealers only,—contractors, consumers and manufacturers using one or two carloads per year. Be it further resolved that our secretary be instructed to send a copy of this resolution to all wholesalers and manufacturers.

Co-operation, on Transportation

Moved by J. T. Wallace, of London, and by B. F. Clarke, of Glencoe, that our Association be prepared to co-operate with the Canadian Manufacturers' Association in connection with matters of transportation and that J. R. Eaton & Sons of Orillia and A. G. Rose, of Ottawa, be authorized to appear on behalf of the Association at the forthcoming conference on classification of joinery work.

Prevention of Accidents

Moved by Thomas Patterson ,of Hamilton, and John C. Gilchrist of Toronto, that we recommend to the members of the Association that they take every step possible for the prevention of accidents and that they co-operate as fully as possible with the representatives of the Accident Prevention Association.

Cost Accounting System

Moved by W. M. Tupling, of Orillia, and L. H. Richards, of Sarnia, that recognizing the importance of accurate cost accounting to our members, be it resolved that a standing committee be appointed for the year 1923 to enquire into the feasibility of working out and submitting to our members the main factors in connection with cost accounting; the committee to consist of Messrs. Zimmerman, Barrett, Bogart, VanDusen and Tupling.

Officers Who Will Direct Affairs

The election of officers for 1923 resulted as follows:—

President,—K. J. Shirton, Dunnville.

Vice-President,—W. M. Tupling, Orillia.

Directors for Eastern District,—Grant P. Davidson, Ottawa; F. B. VanDusen, Brockville.

Directors for Central District,—J. H. Rodgers, Barrie; W. E. S. Savage, Mimico.

Directors for Niagara District,—T. Patterson, Hamilton; T. J. Grantham, Brantford.

Directors for Southern District,—A. R. Sanders, St. Thomas; M. R. Bogart, Chatham.

Directors for Northern Section,—F. E. Hollingsworth, Sault Ste. Marie; M. J. McDonald, Port Arthur.

Furniture for the "Electrical Home"

Wired Tables, Dressers and Beds Have Advantages That Are Bringing Them Into Demand—A Chance for the Furniture Manufacturers to Profit by the Campaigns of the Electrical Men

Electrical furniture—that is, furniture wired and provided with outlets for electric appliances—has taken hold in a great many places. Theoretically, such furniture offers wonderful service in electrically equipped homes, especially when in such homes full advantage is taken of the usefulness and economy of the many electrical appliances that are now being marketed. In most parts of Canada, electricity is now available at low rates and day by day home owners are appreciating more and more the service that is at their beck and call merely by pushing a button or turning a switch. Theoretically, we said, electrical furniture offered splendid advantages, but we can go further and state that in a very practical way, too, such furniture is demonstrating its usefulness. At first, when the idea of wired tables, dressers, etc., was broached, the makers of such pieces had not learned to so conceal the wiring and outlets as to give the furniture a clean-cut appearance. Crudeness was characteristic of their handiwork but with the usefulness of the electrical furniture fully demonstrated and with a growing demand for it, manufacturers have displayed considerable ingenuity in making pieces that are as handsome and as well finished as those that are not equipped with electrical paraphernalia.

Examples of Wired Furniture

If one were to let his mind picture in turn each room of a modern house he would readily visualize pieces of furniture that would readily lend themselves to wiring. Thus in the dining room, there would be the table with suitable outlets to provide for the attachment of a toaster, percolator, urn, grill, egg boiler, chafing dish or other appliances that have a special use on the dinner table, but which, in the home not equipped with wired furniture, must be attached to the lighting fixture or a base plug by means of unsightly, dangling and dangerous cords. The wired table is truly a convenience to the housewife who adopts the electrical way of doing things. Then the tea or dinner wagon lends itself to similar treatment. An outlet or two makes provision for such appliances as will turn out a cup of tea or a piece of toast with

Electrically wired furniture in the dining room of the Montreal "Electrical Home"

A bedroom suite provided with outlets for the insertion of electric attachments

minimum trouble. Even the buffet might be wired to enable electrical candlesticks to be easily and readily attached.

The bedroom is another room in which wired furniture should find ready adoption. The bed itself, for example, might be wired and outleted so that a reading lamp, bed pad or foot warmer could be instantly attached. The dressing table might have provision for electrical curling tongs, hair dryer, vibrator or violet ray outfit, and outlets might be included for little side lights that would give needed illumination.

These suggestions do not by any means exhaust the possibilities in electrical furniture. It is possible to call to mind other pieces that would improve in usefulness through wiring but the ones indicated are the chief pieces that lend themselves to such treatment. In producing such furniture the manufacturer can show a great deal of skill and ingenuity in concealing the wiring and arranging the outlets. It is not amiss to suggest that were makers to market suitable designs, they would find a ready sale for them. The "electrical idea" is being sold to the people of this country and the manufacturers can reap some of the profits themselves. All over the country, electrical men—manufacturers, jobbers and dealers—are boosting the "electrical home" and urging as a part of their scheme the use of electrically wired furniture. Why not take advantage of this propaganda and step in to fill the demand that there will be for such furnishings?

New Type of Ski

That the possibilities of the so-called laminated or built-up form of construction of wooden articles are as yet very inadequately recognized is pointed out by the Forest Products Laboratories of Canada (Dominion Forestry Branch) Montreal, where investigations in this connection are now in progress. Where the article manufactured requires very high grade material, entirely free from defects, it is obviously easier to secure what is wanted in smaller rather than in larger pieces and the use of several small pieces instead of one large one makes the high quality as well as economy of material. The laminated ski, recently developed at the laboratories, is a most interesting example of this type of construction. The adhesive employed and the method of using it are of the first importance in built-up work and in this case a special waterproof glue is used. The new ski, which is being thoroughly tested, both in actual use and at the laboratories, appears to show great strength in proportion to weight as well as a high degree of resiliency and freedom from warping.

A Chance for Ski Makers

A Japanese import house which has done business for some years with Swiss exporters of skis, would be glad to have catalogues and prices from Canadian manufacturers with a view to business in 1923. Further information in possession of the editor of this publication. Refer to inquiry No. 1087.

Kiln Drying Principles and Practices

Practical Information Concerning the Operation of Kilns—The Success of the Result is Almost Entirely Dependent on the Ability and Judgment of the Operator—Some Precautions to Observe

By F. O. Farey
Chief Chemist, Robt. W. Hunt & Co. Ltd., Montreal

For several years the writer has had occasion to study dry kilns and the lumber they produce and has on several occasions carried out investigations to determine the best properties of lumber for various purposes. In my work I have not hesitated to accept authentic research which has been conducted by others and refer particularly to the studies of the Forest Products Laboratories of the United States Forest Service at Madison, Wisconsin. These investigations are considered most authentic and I shall refer to their work during this article and give you some of their results in detail. I wish also to acknowledge the assistance given me by the Canadian Pacific Railway, the Grand Trunk Railway, the Canada Car and Foundry Company, and also the R. W. Hunt & Co. Ltd., who have made a large portion of my own experimental work possible.

The types of kilns in most general use are the compartment kiln, in which the circulation of air is up in the center and down and out at the sides, the progressive kiln, in which the circulation of air is from one end to the other.

In the compartment kiln the heating coils are usually laid in the pit lengthwise of the unit, and are 12″ to 18″ below the floor or below the framework on which is piled the lumber or on which the cars carrying the lumber are run. The intake of the air supply is so situated at the bottom as to allow the cold air to be heated by the coils at a uniform temperature and humidity before it passes into the pile. This air current passes upward and outward through the properly piled lumber and is carried off through ventilating holes in the side of the kiln to the chimney. These ventilating holes are situated in the side walls from one fourth to one half the distance from the bottom of the kiln to the top and are about 3″ x 6″ in size and arranged to give an equal ventilation for the whole unit.

Method of Construction

In construction the kiln may be made of any one of the several materials, such as lumber, cement, tile, brick, etc. Of course, where a battery of kilns is being operated the wood construction increases the fire hazard materially since, if a fire is started, the whole battery and contents may be destroyed. Wood makes a good insulation but should be given a good coat of asphalt paint to prevent in a measure the rapid absorption and evaporation of moisture. This is especially true when the side walls are made up of 2″ x 6″ planks laid flatwise. The continuous working of the walls is liable to cause considerable trouble with the door jambs, ventilation and pipe ports.

Concrete (either monolithic or block) should be thoroughly waterproofed, otherwise difficulty may be encountered when maintaining high humidities. Brick or hollow tile are generally considered the best materials. These should be painted with an elastic cement and repainted as hair cracks generally appear. If hollow tile is used in construction the openings of the blocks should run horizontally rather than vertically, as this will prevent air circulation in the walls.

The writer has seen kilns of the compartment type where the whole heating coil system has been left open under the lumber and the air supply admitted only in an uncertain way through cracks and openings in the doors or around the sides of canvas curtains. It seems, however, that this is a very unsatisfactory method and that it is much preferable to have a flooring over the coils with vents to allow uniform distribution of hot air into the kiln and a regulation to control the supply of air through the main intake. Then the bottom of the pile should be 12″ to 18″ above the floor. Many kilns are not equipped with steam intakes to control the humidity of the chamber.

Desirability of Humidifiers

An example is given to show the effect of this method. The air as taken may be at a temperature of 20° F. and its relative humidity 60%. This air contains .7 grains of moisture per cubic foot. This air is heated to 120° F. as it enters the kiln for green or partially seasoned lumber. At 120° F. the saturation the point of air is 34½ grains per cubic foot, giving a relative humidity at that temperature of only 2%. Of course, this condition is only temporary as the moisture from the lumber soon raises the humidity, but the drying action on the nearest exposed surfaces is tremendous and soon causes checking, especially of hard woods and large timbers. This seems to be ample proof that all kilns should be equipped with steam or spray humidifiers, since some woods require a humidity as high as 85% at the start of the operation and the only way to eliminate case hardening or unequal stresses is to raise the humidity of the kiln to nearly 100% at the temperature at which the kiln is operated. This will require 90 grains of moisture per cubic foot, where the kiln is operated at 160° F. Further reference will be made to this phase during the progress of the article.

Uniformity of Temperature

Another feature, which seems to be of vital importance in the design of the compartment kiln is the heating system. Here I may be treading on dangerous ground, since each manufacturer has his own special design and hook up. The idea was first brought to my attention in technical note No. 90 of the U.S. Forest Products Laboratories. Some kilns are equipped with the header system of heating, that is, the steam is admitted at one end of the system and drainage traps, etc., are at the other end. The writer had studied temperature conditions under this system and noted the considerable difference of temperature between the two ends of the kiln. This is indeed vital, especially where hard woods or timbers are being treated. At one end the lumber may dry

too rapidly, while at the other end no drying action is taking place, and even mould may develop. A remedy of this condition has been given and applied with favorable results by using the return bend heating coil. Here the steam entering at the initial temperature gradually cools on its way to the other end and continues to cool on its return to the starting point. Approximately the sum of the temperature at one end of the system is the same as the sum of the temperature of the coils at the other end. By this means a more uniform temperature is obtained throughout the unit. This is particularly so when low steam pressures and low temperatures are being employed.

The Progressive Kiln

The other principal type of drying kiln is called the progressive kiln which has an end to end circulation of air rather than the vertical-lateral direction. The steam coils, humidifiers, etc., are located below the floor; the air comes up at one end of the kiln, passes horizontally from one end to the other through the piles of lumber and out at the vents in the lower half of the side walls at the other end of the kiln. The platform carrying the lumber trucks is located high enough from the floor to furnish suitable ventilation. The principle of this type is that of a continuous operation. The driest lumber is moved toward the source of heat while new charges are put in at the cooler end.

It is said that this kiln requires less skill in manipulation and consumes less heat per pound of water evaporated than the compartment kiln. It is, however, of greatest value where lumber of uniform thickness and moisture and the same general types of lumber are being supplied. The compartment kiln is almost essential where various kinds of lumber are to be treated at the same time and especially where various sizes are used and different stages of air seasoning has taken place before putting into the kiln.

It is the Operator that Counts

After considering the kilns, how shall we obtain the best results from the apparatus which we have available? It is an admitted fact that as much lumber can be destroyed in one type of kiln as in another or almost as good results may be obtained with one kiln as another. The whole system depends almost absolutely on the ability, judgment and care of the operator.

Probably one of the most essential points is the way lumber is piled to make the kiln most efficient. Proper utilization of available space and proper circulation of air are prime requisites. You cannot pile lumber in a progressive kiln the same as you pile it in a compartment kiln with vertical-lateral circulation. This has been tried and very definite data has been recorded to prove the point.

For the compartment kiln it seems that lumber must be piled endwise so that the stickers will not obstruct the free circulation and form cool pockets in the pile. If this passage is obstructed the lumber at these points will dry more slowly and you will have a variable product at the end, not only in moisture content but checking, internal stresses and warping both in and after removal from the kiln. The natural passage of the air is originally vertical between the piles and then laterally between the boards to the sides and vent holes. If the stickers block this passage as in cross piling it is almost impossible to get a circulation between the boards to such an extent that the outsides of the pile will be dry and check while the inside will retain a large percentage of moisture.

For the progressive kiln the conditions are reversed. Cross piling is almost essential so that the stickers will not obstruct the passage of air as it progresses from one end of the kiln to the other. An example is given of two piles of lumber in the same kiln having vertical-lateral circulation. On the eighth day when we would have assumed that the temperature would have been fairly uniform the thermometer readings were as follows:

	Cross Piled Lumber	End Piled Lumber
Center of pile	110° F.	142° F.
Underneath	168° F.	152° F.
Above	146° F.	146° F.

Faulty Piling Can Produce Bad Results

The difference in temperature between the center and bottom of cross piled lumber was 58° F. while the difference in end piled lumber was 10° F. This record shows that the end piled stock dried in ten days from 30% moisture to 6% while the cross piled stock took 13 days to dry from 30% to 12%. In a kiln with end-to-end circulation the reverse conditions would have been true. It is obvious that lumber should be piled to suit the circulation of the kiln with a view to giving the best passage of air through the pile and maintain all parts of the pile at as nearly the same temperature as possible. This can only be done by using the best judgment of the operator and carrying on such experiments as will prove or disprove the correctness of that judgment. Not only must consideration be given to the direction of piling and placement of the stickers, but to the size of each pile and the thickness of the stickers depending on the thickness of the sections and the width of the lumber stock. It would seem good practice not to have any sticker less than one inch thick and this should be increased to not less than two inches when the thickness of the lumber sections is three inches or greater.

Determination of Circulation

The best method of testing the circulation of air in a kiln is to make some kind of smoke cloud. The Forest Products Laboratories at Madison have devised a chemical smoke which eliminates fire risk and which follows the natural air currents with no tendency of its own to rise or fall, which is the objection to some other smoke clouds. They make a small box with a handle just to hold, two wide mouth bottles, such as common ink bottles. Into the first bottle is inserted a two holed rubber stopper. Into one hole of the stopper is placed a three inch piece of glass tubing bent in the middle at right angles and on the outside connected with two or three feet of rubber tubing of three-sixteenths inch bore. The glass should extend only slightly below the bottom of the stopper. Another piece of similar glass tubing bent into horse-shoe form is inserted in the other hole of the stopper and is sufficiently long to extend into the mouth of the other bottle for about one half inch below the neck. The first bottle is one third filled with strong hydrochloric (muriatic) acid and the second bottle is filled to about the same depth with strong ammonia. The glass tubes should

never touch the liquids—preferably the distance from the liquids should be one half inch to one inch. By blowing through the rubber tubing the vapours of the hydrochloric acid are forced over to meet the vapors of the ammonia to form a cloud of ammonium chloride. This cloud may then be watched during its passage through the kiln. The cloud preferably may be taken in at the air inlet or placed in some advantageous place in the kiln and this rubber tube or a longer one may then be run to the outside through a small hole bored through the wall or door near some observation point. All this presupposes that there are advantageous observation points and that the kiln is lighted. Ventilation must be positive and continuous through all parts of the kiln if the best results are to be obtained, either in the resultant product, the speed of the operation or from a point of cost. This is true whether you are drying small sections of soft woods or larger sections of the refractory hard woods.

While the smoke cloud is a valuable means of assuring ourselves whether or not we are getting positive circulation, it is not all that we are required to know about what is going on in the kiln. We must, at all times, know the temperatures and humidities not only at each end near the doors or peep holes but inside and near the lumber piles themselves. This requires the use of thermometers and hygrometers of various types. Probably the best of these are the glass thermometers and the wet and dry hygrometers. Of course the dry bulb of the glass hygrometers is a thermometer in itself. It is, however, difficult, to use the wet and dry bulb thermometers in every case, since no one would care to enter a dry kiln every two or three times a day to observe the temperature inside of a pile of lumber, especially when some of the higher temperatures are being reached. However, this knowledge must be obtained and a means is provided by the use of recording thermometers and hygrometers. The recording instruments, notwithstanding some of the claims of the manufacturers, must be continually checked against wet and dry bulb glass instruments of known accuracy.

The Wet Bulb Must be Watched

One thing especially should be watched and that is the wet bulb of the hygrometer. Only pure distilled water should be used for filling the hygrometer wells and the silk or muslin covering for the bulb should be kept in good condition and changed from time to time. A small amount of dust or solid material always collects in the meshes and sooner or later this deposit will impede the transfusion of moisture and render the readings valueless. Place no instrument where it will be affected by direct radiation from a cool wall or from the heating coils, as this only leads to erroneous data from which improper conclusions will be drawn. There are numerous types of recording and non-recording instruments on the market by which temperatures and humidities may be determined at any point in the kiln. Directions for installation and use of these instruments are furnished by the manufacturers but these should always be checked against a standard instrument of the glass type. In reading the wet bulb thermometer there should be a sufficient circulation of air to give a maximum evaporation rate. This requires about fifteen feet per second at temperatures below 120 deg. F. At higher temperatures this rate is not so essential but a thorough fanning is usually required. No operator should hesitate to ask his employer for necessary instruments, which will enlarge or facilitate his knowledge of what is going on in the drying chamber, and then to ask for such means as may be necessary for the rectification of unsatisfactory conditions. It may cost a few dollars to properly equip a kiln, but any management which takes unnecessary chances with thousands of dollars worth of lumber at the present time is exercising a short-sighted policy.

Conditions that Affect Drying Time

The question is continually asked as to the proper drying schedule for a certain kind of lumber, whether one wood is easier to dry than others, what temperatures we can use and chiefly how can lumber be dried in a shorter period of time? It is easier to dry some kinds of wood than others. Lumber will dry faster in thin sections naturally, since the distance through which moisture must transfuse from the interior is less. Also certain woods, such as many of the so-called soft woods, allow this transfusion to proceed at a greater speed. Relative densities of the same species, relative proportion of spring and summer wood, also the direction of the grain in the sawed timber affect the time and treatment.

From this it will be seen that very much depends on the judgment of the operator of the kiln, after he has thoroughly examined the material which he is called upon to handle. He should know, within relative narrow limits on some woods, the moisture content. This cannot be determined by feeling the wood despite the claims of many woodworkers. The only reliable way is to cut off a section of the board or timber at least two feet from the end and actually determine the moisture content by drying and weighing. A cross sectional sample is usually sufficient, but at times it is necessary to know whether the moisture is the same on the inside and the outside of the section under examination. Also at times it is necessary to know whether there are internal strains existing in the lumber even though the moisture may be uniform and no surface checks are noticed. These strains are set up in air drying as well as in kiln drying and unless stresses are relieved by steaming you will, in all probability, increase the defects which already existed at the beginning.

The term "steaming" does not necessarily mean turning in a steam hose and filling the chamber with a cloud of steam, which will condense and give a wet surface to the wood, but by the introduction of water vapour by steam or other means, so as to increase the relative humidity to 95 or 100 per cent at the temperature at which the kiln is being operated.

It will probably flash through some of your minds that even in the same batch of lumber there will be a wide variation. Some will show higher moisture than others, some will show checks and internal stresses, while other portions of the charge will be normal. A sufficient number of tests must be made to at least know the worst condition with which you have to deal. The kiln should then be operated to suit the conditions of the poorest lumber. Then too it will be said that all these precautions render its adoption in commercial practice impossible. Each operator must know how carefully each charge must be handled and how good he wishes this resultant

product. You would not treat rough lumber for some construction with the same respect as you would lumber for expensive furniture. But as said above this is where the good judgment of the operator is essential. When the original condition is known the operator must then decide what treatment must be given.

(To be continued)

An Investigation of the Furniture Industry

Federal Trade Commission Makes Survey of the Business in the United States —Some Extracts from the Report that Are of Interest to the Canadian Trade—The Status of Costs, Prices and Profits

Considerable commotion has been caused in the United States by the findings of the Federal Trade Commission in regard to the furniture industry which it has been investigating on authority of the Senate. The report which has recently been handed down is a 30,000 word survey that goes into every aspect of the industry from manufacturing to retailing. While the findings have probably little bearing on Canadian conditions, they are of some interest to manufacturers here as showing the state of the industry on the other side of the line and as indicating that the furniture industry is not the profiteering business that some people would have us believe it is.

The report is divided into two sections covering costs, prices and profits of manufacturers and dealers, and the conditions and practices of the manufacturing and selling of furniture with special emphasis on trade association activities. It covers the operation of the industry through the boom of 1920 and the buyer's strike of 1921.

Part 1 of this report shows that, of every dollar paid by the consumer for furniture in 1920, 13 cents went as net profit for the dealer and 8 cents for the manufacturer. In 1921, 7 cents was net profit for the retailer and 4 cents for the manufacturer. In other words, in 1920 one-fifth of the consumer's dollar went for net profit; in 1921, a little over one-tenth.

In terms of profit on the investment, manufacturers in 1920 averged 28 per cent on the total investment including borrowed money, and retailers 22 per cent, but in 1921, both manufacturers and retailers averaged 8 per cent.

Part 2 shows that the manufacturers, by adopting and using, among other devices, minimum selling value (i.e. price) bulletins acted in concert to advance prices during the early part of 1920; to maintain prices, in conjunction with representatives of retail organizations, in the face of the general slump during the latter part of 1920; and to retard declines in 1921.

Trend of Prices During 1920 and 1921

Wholesale prices of furniture in 1920, the report stated, reached a higher peak than most commodities and subsequently declined more gradually and without approaching so near the prewar level, but manufacturers reduced the prices in greater proportion than their total cost declined. Retailers, reluctant to cut prices on large stocks of high priced furniture, were about six months behind the manufacturers in passing the reduction to consumers. Installment prices charged by dealers were estimated at least 16 per cent higher than cash prices.

The report says: "Furniture prices did not rise as rapidly as those of farm products from 1914 to 1919. Furniture prices reached their peak two months later than 'all commodities,' but this peak was considerably higher than that of either of the other two classifications. Furniture held this peak through October, 1920, several months after farm products and 'all commodities' had declined and when the price decline did come in furniture, prices did not fall as far as those of farm products and 'other commodities.'"

Wages not Reduced as Much as Prices

Neither manufacturers nor retailers reduced wages as much relatively, as they reduced prices. Retailers, moreover, did not reduce wages of employees as much as they reduced salaries of officers and proprietors of the firms.

The report emphasizes the great extent to which the retailing of furniture is done on the installment plan. Installment stores, the report states, generally had higher operating expenses but made considerably higher profits on the investment than stores doing primarily a cash business. Customers buying on the installment plan, according to the report, have to pay prices that on the average are approximately 16 per cent higher than those paid by customers buying on a cash basis.

From a tabulation of the average cost of production of 260 manufacturers of all kinds of household furniture, it is found that cost of labor in 1921 constituted a considerably higher proportion of factory cost than it did in 1920, while cost of materials in 1921 constituted a considerably lower proportion than it did in 1920. Administrative and selling expenses also were higher.

Faulty Methods of Accounting

The report finds fault with manufacturers' methods of accounting stating that accurate data could not be secured on costs. All had estimated costs which did not balance with ledger accounts. Therefore the commission used actual costs based on the income statements of 260 of the 299 companies. These reports show that of the total cost of furniture sold in 1920 materials accounted for 49 per cent; labor, 29 per cent; factory burden, 6 per cent; selling and general administrative expense, 16 per cent. In 1921 these figures were revised thusly: Materials, 41 per cent; labor, 33 per cent; factory burden, 7 per cent; selling and general administration, 19 per cent.

Declaring the manufacturers' adoption of minimum "selling value" bulletins as equivalent to minimum price understandings, and sharply distinguishing a uniform cost accounting system of artificial uniform costs, the Commission says that the cost and selling value bulletins issued by the principal associations were based on uniform theoretical costs for articles of specified construction, to which was added a uniform 25 per cent for contingencies and profit, thus establishing minimum selling prices. Individual

manufacturers were entirely free to get prices as much above these minima as they could. The Commission points out that this system of minimum instead of fixed prices, with its lack of any drastic elements of compulsion was probably the most feasible method of price control in this industry, the product of which varies so widely in style, materials and construction as to render fixed price agreements unworkable.

The findings of the report are stated by the Commission as follows:

Findings as to Prices and Profits

The findings as to prices and profits are as follows:

(1) Wholesale prices of household furniture in 1920 reached a higher peak than most commodities and subsequently declined more gradually and without approaching so near the pre-war level.

(2) Furniture manufacturers, however, reduced their prices more in absolute amount than the decline in prices of raw materials, relatively more than wages, and both absolutely and relatively more than they reduced their total cost.

(3) Retailers also reduced prices, and by the early part of 1922 probably in as great proportion as the manufacturers, but reluctant to cut prices on large stocks of high priced furniture their price reductions lagged about a half year behind.

(4) Representative data for 299 furniture manufacturers and 424 specialized retailers gave average rates of profit on investment in 1920 of 28.2 per cent for manufacturers and 22 per cent for both manufacturers and retailers.

(5) Out of the consumers' dollar the net profit for the dealer in 1920 averaged 13 cents; in 1921, 7 cents; for the manufacturer it averaged 8 cents in 1920 and 4 cents in 1921.

(6) Most retailing of furniture in 1920 and 1921 was on the installment plan and installment prices averaged probably at least 16 per cent above cash prices. Installment stores generally had higher operating expenses but made considerably higher profits on the investment than those doing primarily a cash business.

Association Activities

The finding as to association activities are these:

(1) The principal manufacturers' associations, whose members produce the bulk of the country's furniture, have restricted competition by means of resolutions tending to concerted price policy, by price comparison meetings, and by the adoption of minimum "selling values" (prices.)

(2) Leading furniture manufacturers' associations have jointly employed an expert to price articles of furniture for their members on a theoretical cost basis which tended to uniformity of prices.

(3) Various retail organizations have frequently interfered with the sale of furniture by manufacturers to consumers and to so-called "illegitimate" dealers by means of concerted complaints of members to offending manufacturers and by the publication of the "Buyers Guide" and "Tattle Tales."

(4) In the autumn of 1920, the leading manufacturers' associations, following a conference with the organized retailers who insisted that they should have time to dispose of their high-priced stocks, advised their members to defer making reductions in factory prices.

(5) Although a movement for "truth in furniture" has recently been started, which includes many manufacturers and dealers, furniture, both as to materials and workmanship, is often misrepresented in a manner to deceive the public.

Utilization of Blue-Stained Lumber

While it has been established that blue stain in lumber is not an early stage of decay, but merely an indication of the presence in the sapwood of a fungus which does not materially affect the strength of the wood for ordinary commercial purposes, no absolutely effective method of preventing it other than kiln drying has been found. Kiln tests at the Forest Products Laboratory, of the U. S. Forest Service, have shown that a temperature of 140 deg. F. for a period of 6 hours is sufficient to kill the blue-stain in the centre of test pieces up to 4 by 4 inches square. No chemical dip for green lumber has been found which is remedial in periods of continued rain during the warm months. Until a suitable method of prevention is found applicable in cases where drying is not feasible, intelligent utilization of the discolored stock will remain the only means of discounting the damage done by the blue-stain fungus when the methods now available have failed to keep it out. Resurfacing will not help when the fungus has made substantial penetration.

As blemish in any degree would destroy the beauty of the grain of the wood, bright, stain-free stock is highly desirable for a large variety of uses requiring a natural finish. But for many purposes where the wood is to be covered up or painted and where the use of sapwood is permissible, there is no reason for discriminating against blue-stain material, provided no wood-destroying fungi are associated with the stain.

As the conditions which favor the development of stains in sapwood also offer the opportunity for infection with the wood-destroying fungi, the holder of such material should assure himself that no indications of these harmful fungi are present before recommending the use of badly blued stock.

Blue stain is freely accepted in rough lumber, lath, scantling, plank, and some of the larger sizes of dimension. More could well be used in the manufacture of sash, doors, millwork, and other products when the discoloration is to be painted or otherwise hidden from view.

A few uses for blue-stain material are given below, referring to material to be painted or stained in uses where appearance is important.

Automobiles and vehicles	Patterns and flasks
Billboards and signs	Paving blocks
Board walks	Picture frames, moldings
Boxes and crates	Rafters
Car construction	Rails and balusters
Casings and baseboard	Sash
Caskets and coffins	Scaffolding
Ceiling	Screens and screen doors
Concrete forms	Sheathing
Core stock	Shelving
Doors	Shingles
Finish, exterior	Siding
Furniture and casegoods	Stairs and stepping
Gates and fences	Structural timbers
Joists	Studding
Lath	Sub-flooring
Partition	Toys and turnings

New Ideas in Woodworking Machinery

The design of equipment for the woodworking plant is being greatly influenced by several factors which are operative as a result of a demand for greater economy, power and speed. Motor drive is one of the important trends and this instalment of the article which began in the last issue discusses various aspects of this important subject.

By Seth Madsen*

In general, 3-phase 60-cycle current is standard for woodworking plants. This limits motor speeds not only to 3,600 r.p.m. maximum, but also to comparatively few other speeds. Frequency changers are now standard equipment with many electrical manufacturers, and they are generally installed at individual units to care for each new high-speed motor-driven machine as installed. This practice soon requires an undesirable number of extra units.

A problem which is already becoming acute is to determine the better practice of providing higher frequency current, whether by frequency changers or by direct generation in the power plant; also how many frequencies should be available and which will give the most desirable range of motor speeds. Table 1 gives the available synchronous speeds for a wide range of frequencies. From this we can choose such combinations as are desired.

Assuming that 60 cycles will always be standard

TABLE 1 SYNCHRONOUS MOTOR SPEEDS

No. of Poles	Number of Cycles												
	60	65	70	75	80	85	90	95	100	105	110	115	120
2	3600	3900	4200	4500	4800	5100	5400	5700	6000	6300	6600	6900	7200
4	1800	1950	2100	2250	2400	2550	2700	2850	3000	3150	3300	3450	3600
6	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
8	900	975	1050	1125	1200	1275	1350	1425	1500	1575	1650	1725	1800
10	720	780	840	900	960	1020	1080	1140	1200	1260	1320	1380	1440
12	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
14	512	555	597	640	683	725	768	811	853	896	939	981	1024
16	450	487	525	562	600	637	675	712	750	787	825	862	900

and that one other frequency is desired, Table 2 gives the additional motor speeds for 80 and 85 cycles. Of the two, 80 cycles gives the better range of speeds, but the maximum speed available may not be considered high enough. If the highest speed must govern, then 85 cycles is preferable.

If we wish to have three frequencies available we find that 60, 75 and 90 cycles or 60, 80 and 100 cycles give the best ranges of speeds with the most uniform steps. The combination shown in the left-hand half of Table 3 gives a most desirable range above 1,080 r.p.m., and is probably preferable for direct connection of motor to cutter-head arbors.

The right-hand half of Table 3 shows a combination of speeds that has fairly even steps all through, and is especially even in steps for speeds below 1,000 r.p.m. This makes this combination especially desirable for direct connection of motors to exhauster fans, where quite definite speeds are needed and which are not obtainable with the 60-cycle current alone. Everything considered, 60, 80 and 100-cycle currents seem to be the most desirable. This permits a start with 60 and 80 cycles, as in Table 2, and later adding the 100-cycle current.

Another use of two or three frequencies is for

TABLE 2 MOTOR SPEEDS AVAILABLE WITH TWO FREQUENCIES
(2- to 16-pole motors)

Cycles		Difference in speeds	Cycles		Difference in speeds
60	80		60	85	
450		62	450		62
512		88	512		82
600	600	83	600		37
	683	37		637	83
720		80	720		5
	800	100		725	125
900		60		850	75
	960	240	900		120
1200	1200	400		1020	80
	1600	200	1200		75
1800		600		1275	425
	2400	1200		1700	100
3600		1200	1800		750
	4800			2550	1050
			3600		1500
				5100	

driving feed motors. It also makes available a proper cutter-head speed to suit the work being done, a practice which is still quite unknown to the woodworking industry. One machine-building company already cares for this by using a multi-speed motor for driving the frequency changer, which indicates that variable cutter-head speeds may even now be

TABLE 3 MOTOR SPEEDS AVAILABLE WITH THREE FREQUENCIES
(2- to 16-pole motors)

Cycles			Speed Diff	Cycles			Speed Diff
60	75	90		60	80	100	
450			62	450			62
512			50	512			88
	562		38	600	600		83
600			40		683		37
	640		35	720			30
		675	45			750	50
720			30		800		53
	750		18			853	47
		768	132	900			60
900	900	900	180		960		40
		1080	45			1000	200
	1125		75	1200	1200	1200	300
1200			150			1500	100
		1350	150		1600		200
	1500		300	1800			200
1800		1800	450			2000	400
	2250		450		2400		600
		2700	900			3000	600
3600			900	3600			1200
	4500		900		4800		1200
		5400				6000	

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on the way. It seems logical that different woods and different cutter heads should operate at different speeds for best results.

Power Generation

There are many ways of generating or converting power of different frequencies, such as:

1—Main generator, 60-cycle; others through frequency changes.

2—Two or more independent units operating at different frequencies.

3—One large prime mover with two or three generators on the same shaft.

In small plants the first method is undoubtedly to be preferred. Where only two frequencies are desired two separate units might be preferable, especially for larger plants. When three frequencies are desired it seems best to use at least two units and possibly to put two generators on one shaft.

Another solution may be in specially built generators with multiple windings. These are problems that are worthy of some thought. Each plant will have its own problems as to how large the capacity for current of each frequency must be. It would be desirable to have the higher frequency units arranged to operate at 60 cycles in emergencies. Nearly all woodworking machines can be operated with considerable variation in speed if necessary, in case of breakdown or emergency. Other considerations will be extra switchboards and power lines, but this part of the multiple system is not complicated.

This discussion has thus far dealt but briefly with these new factors in woodworking-machinery design, but it is hoped that it may point out the opportunity for standardization among machine builders in getting out this new line of electric machines. Among items that may well be standardized may be mentioned:

1—Use of 3-phase 60-cycle 220-volt alternating current as the basic standard for power in woodworking plants.

2—Adoption of either 40- or 50-deg. rating for motors; 40-deg. motors are decidedly to be preferred in woodworking plants.

3—A definite choice of certain higher frequencies. The adoption of 60, 80 and 100 cycles is suggested.

4—An attempt at standard design for motor mounting, arbor bearings and motor-control apparatus.

The reason for such standardization is to simplify the amount of apparatus with which the woodworking-machine operators must fe familiar. Simplicity and standardization will be greatly appreciated by the users and will contribute greatly to the development of this type of machinery.

In concluding his brief discussion of this important subject, the author wishes to express the hope that it will aid in some way in drawing designers, manufacturers and users into closer co-operation in the development of what we may properly style as the woodworking machinery of the future.

Metal Straps Decrease Box Lumber Thickness

20 to 40 per cent Reduction in the Thickness of the Sides, Top and Bottom of Nailed Wooden Boxes if They are Properly Bound With Metal —The Size of Straps and the Manner of Application

The thickness of lumber required in the sides, top, and bottom of a nailed wooden box to give it adequate strength and serviceability without metal bindings may safely be reduced 20 to 40 per cent if the box is properly bound with metal straps. This conclusion is based on numerous observations of boxes in commercial service and on the results of tests made on some 2,000 strapped wooden boxes by the Forest Products Laboratory of the U.S. Forest Service, Madison, Wisconsin, who have just issued a report on the matter.

Although the numerous factors affecting the economic use of metal bindings have not all been studied, the general conclusions derived from this investigation should serve as a guide in the use of metal bindings on common types of nailed wooden boxes.

Number and Position of Straps

As a rule, straps should encircle the small dimensions of the box and act perpendicular to the grain in the sides, top, and bottom. If only one strap is used, it should be nailless and applied around the center of the box. When two straps are used, they should be applied 1/6 the length of the box from the ends or around the extreme ends, depending on whether they are nailless or nailed. When three or more straps are used, the two outer straps should be applied as specified for two straps, and the others spaced equally between them. Three or more straps are recommended on relatively long boxes.

Nailless straps placed some distance from the ends of the box distribute the shocks which otherwise would be locally absorbed. This action relieves the direct pull on the nails and reduces splitting or breaking of the sides, top, and bottom. On boxes with adequate end cleats nailless straps properly spaced along the length of the box might sometimes permit the use of thinner lumber than would straps nailed around the extreme ends.

Straps nailed around the extreme ends act somewhat as a cleat and give more rigidity to the box than nailless straps, and are usually preferable on uncleated end boxes.

Size of Straps

The same total cross-sectional area of strapping is recommended for two and three straps, and the same reduction in thickness of box material is permitted; but when one strap is used it should have 60 per cent of this total cross-sectional area, and a lesser reduction in thickness of lumber is permitted.

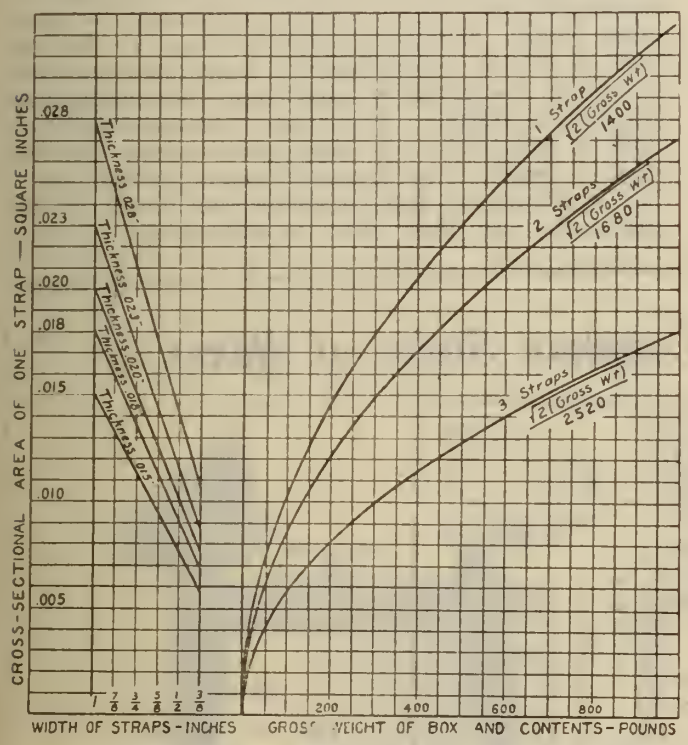
Tests made thus far indicate that the total cross-sectional area of one strap in square inches should equal approximately 1/1400, and of two or more straps 1/840, of the square root of twice the gross weight of the box and contents in pounds.

The required size for one, two, and three straps may rapidly be found by means of the accompanying chart, as follows: Starting with the weight of the box and contents, move directly upward to the curve for the number of straps decided upon; then move left to the line representing the thickness of the strap

to be used. The first vertical line at or left of this point of intersection represents the width of strap required. Or, move to the left, as above, to the vertical line representing the width of strap decided upon, and the first diagonal line at or above this point of intersection will represent the thickness of strap required.

Application of Strapping

All strapping should be applied immediately before the box is ready for shipment and should be drawn sufficiently tight to sink into the edges of the box. Nailless straps should be applied at right



Recommended sizes of flat metal straps for nailed wooden boxes

angles to the edges of a box; otherwise they are quite likely to adjust themselves and become loose during service.

The following table gives the maximum tensile strength recommended for various sizes of nailed and nailless strapping:

Size of strap in inches	Tensile strength in pounds	
	Nailless strapping	Nailed strapping
3/8 x .015	473	405
3/8 x .018	566	486
3/8 x .020	630	540
3/8 x .023	725	621
1/2 x .015	630	540
1/2 x .018	756	648
1/2 x .020	840	720
1/2 x .023	966	829
5/8 x .015	786	675
5/8 x .018	946	810
5/8 x .020	1050	900
5/8 x .023	1207	1035
3/4 x .018	1132	972
3/4 x .020	1260	1080
3/4 x .023	1450	1240
3/4 x .028	1760	1510
7/8 x .018	1320	1135
7/8 x .020	1470	1260
7/8 x .023	1690	1450
7/8 x .028	2050	1765
1 x .018	1512	1295
1 x .020	1680	1440
1 x .023	1930	1655
1 x .028	2350	2015

The ends of nailless strapping should be joined in such a manner that the joint will have not less than 75 per cent of the strength of the strap.

Permissible Reduction in Thickness of Lumber

If boxes are to be strapped in accordance with these rules, the thickness of their sides, tops, and bottoms may be reduced below that required for unstrapped boxes designed for the same service, according to the following schedule:

Thickness of sides, tops, and bottoms of unstrapped boxes, in inches	Thickness of sides, tops, and bottoms of strapped boxes, in inches	
	One strap	Two or more straps
7/8	5/8	1/2
13/16	5/8	1/2
5/8	1/2	3/8
9/16	7/16	5/16
1/2	3/8	5/16
7/16	5/16	1/4
3/8	5/16	1/4

Nailing Required on Strapped Boxes

The information obtained shows that it is not economical to use fewer nails in strapped boxes than in unstrapped boxes. On the contrary, with the reduction of the thickness of sides, top, and bottom, more nails though somewhat smaller ones should be used than are required in the nailing schedule for unstrapped boxes of the same kind and thickness of end material. Copies of the nailing schedule for unstrapped boxes may be obtained on request from the Forest Products Laboratory, Madison, Wisconsin.

The nails used in fastening strapping to the box should be of the same size and spaced twice as far apart as those used in the box.

What is Meant by "Hardwoods" and "Softwoods"?

No definite degree of hardness divides the "hardwoods" from the "softwoods." In fact, the only absolute distinction which can be made between the two classes of wood has nothing to do with their hardness or softness. The terms are simply one of several pairs of popular descriptive names in use for referring to trees of the two great groups, botanically known as the Angiosperms and the Gymnosperms.

The botanical distinction between these groups, which is that the seeds of the Angiosperms are enclosed in pericarps and the seeds of the Gymnosperms are exposed, is in itself of no commercial importance. But there are numerous general differences which make it necessary for wood users constantly to refer to Angiosperms and Gymnosperms by some name or other. Differences in structure, appearance, properties, size, and quality of the timber and in regions of growth keep the woods of the two groups more or less separated, from the logging operation down through the manufacturing process to the ultimate use.

Common Terms are Really Misleading

The terms "hardwoods" and "softwoods" are the most generally accepted popular names for the two classes of trees, although they are perhaps the most misleading. It is true that many Angiosperms, such as oak, hickery, sugar maple, and black locust, are notably hard woods, and that many Gymnosperms, such as most pines and spruces, are rather soft woods. But there are a number of out standing exceptions.

Basswood, poplar, aspen, and cottonwood, which are all classified as hardwoods, are in reality among the softest of woods. Longleaf pine, on the other hand, is about as hard as the average hardwood, although it is classified as a softwood. Yew, another so-called softwood, is about three times as hard as basswood and considerably harder than most oaks.

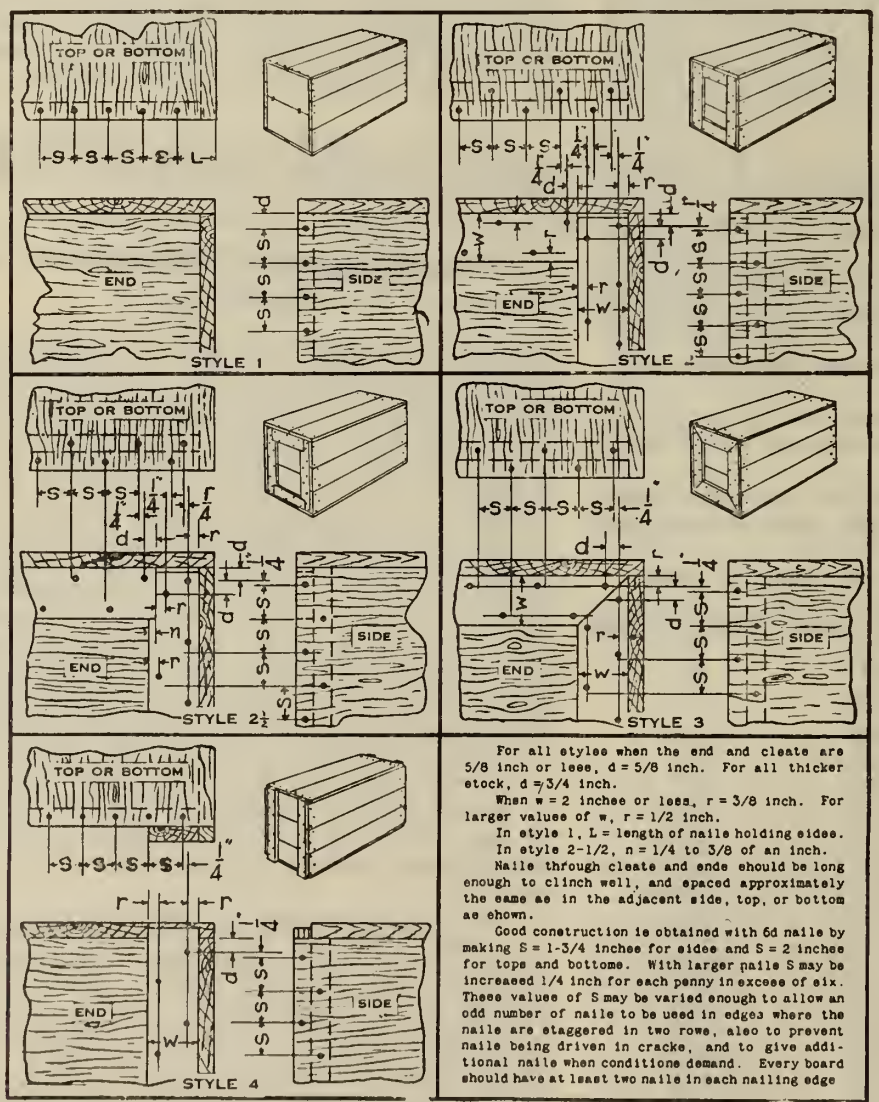
Another common name for the Gymnosperms is "conifers." This is more accurate than "softwoods," as all native Gymnosperms except the yew are cone-bearing trees.

Gymnosperms are sometimes spoken of as "the evergreens" and Angiosperms as "the deciduous trees," from the fact that most trees in the former groups keep their foliage the year round and most of those in the latter group lose their leaves during the fall or winter months. The excpetions among the softwoods are bald cypress and tamarack, which have no leaves in winter. With hardwoods it is more or less a matter of climate. Many tropical hardwoods are green the year round.

The most accurate popular description of the two groups are "trees with broad leaves" for the Angiosperms and "trees with needles or scale-like leaves" for the Gymnosperms. These are the definitions generally given by dictionaries for hardwoods and softwoods, or hardwoods and conifers. They divide woods almost exactly in accordance with the botanical grouping. The few Gymnosperms, such as the ginkgo, which have broad leaves are not native to this country.

A difference in cellular structure which has been found to exist between the commercial Angiosperms and Gymnosperms is a very reliable means of distinguishing between the two groups, the hardwoods being called the porous and the softwoods the non-porous woods. The term "porous" refers to the precence of certain comparatively large open-end cells or pores in the wood, in addition to the small closed end cells, or fibers. These large specialized cells are found in practically all Angiosperms, their function being to conduct sap from the roots to the leaves. The Gymnosperms have developed no pores for this purpose, but use their fibres to elevate sap.

Details of Nailing for Common Styles of Boxes



For all styles when the end and cleats are 5/8 inch or less, d = 5/8 inch. For all thicker stock, d = 3/4 inch.

When w = 2 inches or less, r = 3/8 inch. For larger values of w, r = 1/2 inch.

In style 1, L = length of nails holding sides.

In style 2-1/2, n = 1/4 to 3/8 of an inch.

Nails through cleats and ends should be long enough to clinch well, and spaced approximately the same as in the adjacent side, top, or bottom as shown.

Good construction is obtained with 6d nails by making S = 1-3/4 inches for sides and S = 2 inches for tops and bottoms. With larger nails S may be increased 1/4 inch for each penny in excess of six. These values of S may be varied enough to allow an odd number of nails to be used in edges where the nails are staggered in two rows, also to prevent nails being driven in cracks, and to give additional nails when conditions demand. Every board should have at least two nails in each nailing edge

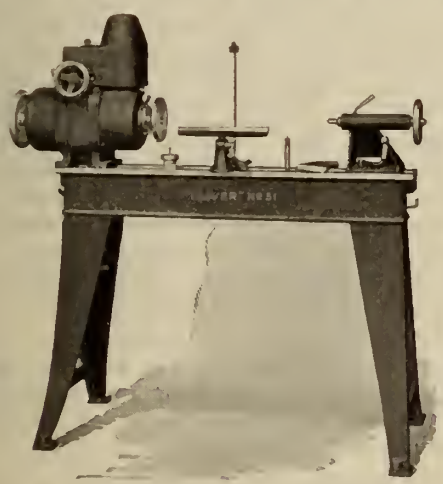
This set of diagrams has been prepared by the Forest Products Laboratory at Madison to indicate how the sides and ends of five common styles of boxes should be nailed. Good construction demands careful attention to the nailing details and the adjoining suggestions are recommended as meeting all requirements.

Machinery & Equipment

Adjustable Speed, Alternating Current, Motor Head Speed Lathe

Something new in speed lathes has been developed by the Oliver Machinery Co., Grand Rapids, Mich., which is called the Oliver No. 51 alternating speed motor head lathe for alternating current. It is not a four speed motor such as several makers have furnished for several years, but a variable speed motor that will operate at any speed between 600 to 3,600 r.p.m. It will operate from single, two or three phase lines. This makes the alternating current lathe just as flexible as the direct current lathe and offers at a moderate price a motor headstock lathe that will operate on a single phase current.

The motor itself forms the headstock of this lathe and is entirely enclosed, as is also the control apparatus. Any speed from 600 to 3,600 r.p.m. is easily secured. It is equipped with high grade, self-aligning bearings. The motor is of the single phase, series-compensated type. It will operate on any single or polyphase circuit of proper voltage and can be furnished for any frequency from 25 to 60 cycles. The cover on compensator end is removable for internal inspection. The wiring from main line to motor comprises two wires only, making its connection simple through the avoidance of a multiplicity of wires incidental to the use of regulators or rheostats.



The Oliver No. 51 a.c. motor head lathe

The entire controlling mechanism is contained in the motor. There are no field rheostats, regulators or relays. Speeds from 600 to 3,600 r.p.m. or any intermediate speed may be obtained by simply turning the conveniently placed hand wheel. A governor of the centrifugal type is built in as a part of the motor and serves the sole purpose of maintaining constant any particular motor speed desired. This is accomplished by increasing or decreasing the intervals during which the motor receives energy from the main line. The tension of the governor spring is adjusted by a conveniently placed hand wheel. The motor speed may be varied by turning the control hand wheel while the motor is running. A push button start and stop switch with cartridge type overload protection is built in as a part of the motor.

The motor is equipped with the Oliver patented combined hand wheel and face plate. This is quite a new feature. The hand wheel shown at the left may also be used for the face plate for outside turning. As a hand wheel it may be used to turn the work to desired position or it is often used to stop the motor more quickly. It is thoroughly covered by patents.

These motor head lathes have all the advantages of direct motor driven machines, viz: Increased efficiency, increased safety, all belts eliminated, machine is simplified and it may be placed on the floor to best advantage without regard to line shafts.

Differences Between Heartwood and Sapwood

Sapwood is the outer light-colored portion of a tree trunk through which the water passes from the roots to the leaves, and in which excess food is stored temporarily. Heartwood is the central core of the trunk. In most woods the heartwood can be distinguished from the sapwood by its darker color. But in hemlock, aspen, cottonwood, some beeches, all spruces except Sitka spruce, basswood, holly, hackberry, tupelo gum, and the true firs (not Douglas fir), there is very little difference in the color of the heartwood and the sapwood.

As new sap is formed on the outside of the tree trunk, the inner sapwood changes to heartwood. During this change the living cells die; the pores of some woods become plugged up with a froth-like growth, known as "tyloses"; and the cell walls, and in some species the cell cavities, become infiltrated with various substances, some of which darken the wood. These infiltrations do not add appreciably to the weight of the wood, except in species like ebony and rosewood in which the pores become filled with deposits.

In over 500,000 tests which have been made by the Forests Products Laboratory, Madison, Wisconsin, no effect upon the mechanical properties of the wood due to its change from sapwood into heartwood has ever been noticed. The heartwood of oak, pine, and other structural timbers is not intrinsically stronger than the heartwood, as is sometimes claimed in connection with handle stock.

The essential differences between heartwood and softwood are as follows:

Heartwood, as a rule, is more durable than sapwood in damp locations and less subject to attack by stain and mould-producing fungi. It usually is colored and therefore considered more ornamental than the white sapwood, except in a few cases; in yellow pine interior finish and maple flooring, for example, the white sapwood is preferred. Heartwood is less permeable to liquid and therefore more suitable for tight cooperage, tanks, and conduits; and it responds more slowly to changes in atmospheric humidity,

which often is of advantage when uncoated wood is exposed for a relatively short time to a different humidity. The heartwood of some species contains more valuable extractable materials, such as tannin and dyes, than does the sapwood.

Sapwood, as a rule, takes preservative treatment better than heartwood. It seasons faster, but when green usually contains a larger percentage of moisture which often makes it heavier. Because sapwood is the outer portion of the tree it contains fewer common defects, such as knots, shakes, and pitch streaks. In resinous species the sapwood usually contains less resin than the heartwood. Sapwood is more free from odor and taste, which may be an advantage in some cases, and a disadvantage in other cases.

Give the Boy a Chance!

Encourage Him to Learn to Work in Wood—Present Educational System is Claimed to Spoil the Youth and Unfit Him for Toil

Because a message recently sent to the trade by the National Lumber and Manufacturing Co., Hoquiam, Wash, U.S.A., contains one or two ideas of very important bearing on the welfare of the woodworking industry, it is reprinted below. In general it is a plea for the encouraging of boys to take up the woodworking trades—a very commendable motive in view of the inadequacy of the supply of skilled workmen. The message follows:

"Attention is being called to the growing shortage of skilled workmen in wood—a shortage of men who can secure the best results possible in turning a piece of rough wood into some useful thing of art and beauty.

"The school is the proper place to excite the enthusiasm and awaken the interest of the coming man—to create in his mind the desire to plane, to saw, to fashion, to work in wood. Our present day system of education is faulty. The ignobility, the disgrace of soiled hands and the workmen's suit, is being more and more instilled in the minds of the boys and girls, not only in the schools, but in the homes where education first starts; and this influence is manifested in the schools. This is as true of the country schools and homes as of the towns and cities. Work, common labor, is a thing debased, and yet, no real success in life has come without work and ceaseless effort.

"The mothers of the nation are naturally ambitious for their children and in countless homes the "Old Man" is held up as an example of what not to be. Poor dad, plodding, hard working, seemingly unambitous, frugal, self-effacing and unselfish, his thoughts, his dreams for the ones dependent upon his efforts, his ambitions, his heart-aches, his disappointments smothered under a veil of silence and blank expressions, a victim of the deadly, daily grind, understood by few, misunderstood by many—he steadily "carries on."

"Mother, with the nesting instinct and the desire for the betterment of her off-spring, has the clearer perspective. With her it is a constant fight to keep up appearances, to keep the home fires burning; while welcoming the weekly pay check as a meal ticket, she has the idea that hard work 'doesn't get you much.' She preaches thus and points out the more fortunate as model lives to study and to pattern after. She is preaching and breeding divine discontent and this spirit, this feeling of unrest and ambition, has made the country what it is today and will drive it on to greater things.

"Our present method of education is too sugar-coated, too much like a Mother Hubbard that covers a great deal without touching on anything in particular—a lack of specialization and thoroughness.

"Walk into some of the larger cities and talk to the radicals that seek to overthrow our present form of government—to Russianize our institutions—and you will find that a large percentage of the leaders are high school graduates or have gone farther and passed a year or more in some university or college. They have a smattering of knowledge, but are unfitted for any work, through their state of mind and their distaste for concentration and work.

"The people cry out against the influx of the uneducated foreigner; but the reds are not led by "Skis" but by men with good old American, English, Irish and Swedish names. Dig deeper and you will find that their fathers were the hard-working men that made our country possible; who toiled and saved to educate their boys and give them advantages that they themselves craved for.

"There is more danger to our nation through the class we picture than from the right kind of immigrants who have been taught to labor and to save. The latter have constructive ideas, the former destructive, and we need to stress more those studies in our schools that tend to inspire constructive thought, concentrated thinking, and definite results. And, what is better than working in wood? Educating the eye, the mind, the imagination, and the hand, the mental picture and its working out; bringing into play all the best of man. And a man so grounded in fundamentals will never be a victim of the impossible dreamer.

"It is up to the men in the lumber business to arouse interest in this question and to make it possible for the boy to secure the wood that he needs in his practice and work.

"Put the question to yourself and to your men. If a boy came in your yard or factory today inquiring for certain pieces of wood with which to fashion something that was in his mind, would you make it easy for him to secure it; or, would you bark at him and send him away discouraged and disheartened?

"Thousands of embryo woodworkers have been driven into other fields by the thoughtlessness of lumbermen who could not be bothered with such trivial sales. So, let us decide to turn over a new leaf and encourage the effort of the boy or person who has a desire to play or work in the cutting up of wood, and to add our voice and influence in seeing that in every school opportunities will exist to work in things that will be of value in later life."

Representation for Canadian Machinery Manufacturers

An established firm in Antwerp, Belgium, desires to represent Canadian firms exporting small electric motors and woodworking machinery. Further information in possession of the editor. Refer to inquiry No. 1071.

Upholstering and Trimming

Covering a Chesterfield

The Manner in Which the Arms, Back and Seat of a Down Stuffed Piece are Upholstered

The down pad which covers the arm of the piece we are describing in this series of articles taken from "The Upholsterer" must be shaped to fit the double stuffing and give the proper form to the finished arm.

A piece of cardboard is placed in front of the nosing and tacked as shown in Fig. 199 and the outline of the nosing is traced on the back of the cardboard indicated by the dotted line X to X. This shows the shape of the under side of the cushion. The thickness of the cushion must be allowed for, 2 or 2½ inches at the bottom sweeping around and diminishing at the top outside of the arm.

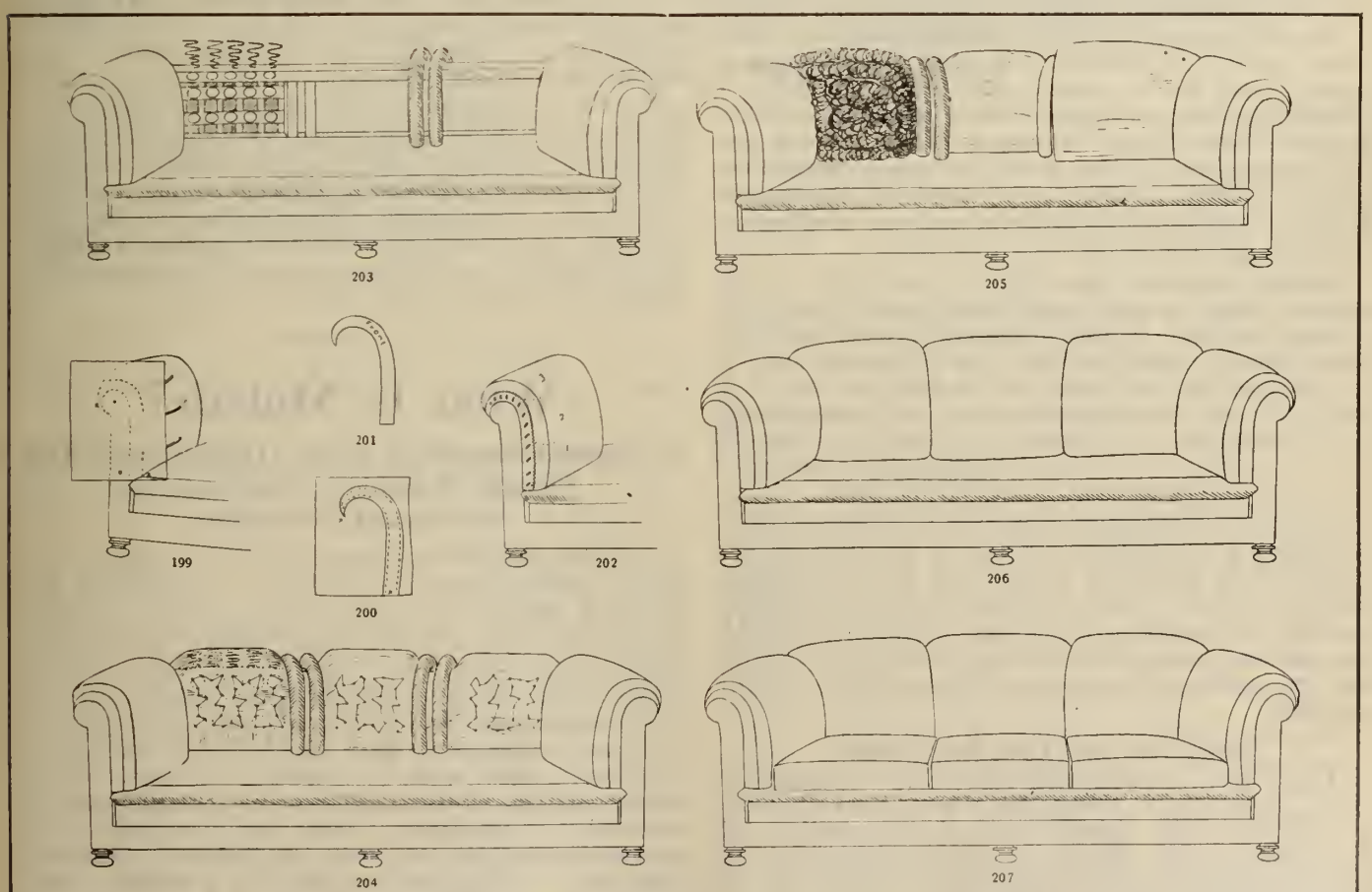
This constitutes the pattern for the front of the cushion as shown in Fig. 201. The pattern is now placed on the fabric and cut out with ½ inch allowance for seams as shown in Fig. 200. A similar piece is cut for the back of the cushion, the top, bottom and lower edge added with the partitions as shown in Fig. 202; the sections 1, 2, and 3 filled with down and the form sewn into place as shown in Fig. 202.

After both arms are finished in muslin the backs are next to receive attention. These are built up in three separate pieces divided by the wedge-shaped rolls already described. The outside back is webbed as shown in Fig. 203 and 20 small pillow springs placed in position, tied and covered with burlaps as shown in Fig. 204.

The same process is now followed in constructing the back cushions as has been already described in connection with the arms. The downfilled cushions must each be shaped by making the pattern for the side borders and each one sewn in place to the built-up rolls which divide the back into three sections.

Fig. 205 shows the process progressively; the left hand section shows the hair understuffing, the middle section shows the haircovered with burlaps and the right-hand section shows the down-filled cushions in place.

Fig. 206 shows the three backs and arms with all down-filled cushions in place and Fig. 207 shows the seat cushions added. The covering of a piece of this type involves no new principles but requires careful planning which will be explained in detail in the next number.



How the arms, back and seat of a chesterfield are upholstered

The Trend in Upholstered Furniture Styles

What the Recent Exhibits at Toronto, Kitchener and Stratford Show—Chesterfield as Popular as Ever—Mohair is the Most Widely Used Covering for Expensive Suites—Reed Furniture Tendencies

It is interesting to note what the furniture shows are displaying in the way of upholstering furniture and for this reason some more particular reference will be made here to the exhibits at Toronto, Kitchener and Stratford, Ont., than was done in the last issue of the "Canadian Woodworker."

In the first place the displays indicate that living room furniture manufacturers do not yet show anything that promises to supersede the chesterfield. The over-stuffed goods represent comfort and that is the first requisite in the living room. However, there are some concessions being made to "style." The roll, or flare arm is very much to the fore, and the general tendency is toward a greater delicacy of outline. Some wide-awake buyers are of the opinion, however, that the flat-arm type will continue to fill a very large place in the homes of their public, because that same element, comfort, counts first with a great many people. There is, of course, always the striving to attain something different and, to that end, many manufacturers are showing a wood bottom rail along the front of the chesterfields and wood mouldings on the front of the arms.

No Abatement in Popularity of Mohair

Mohair is the covering material for high-priced suites. Some very fine tapesteries are shown, it is true, but it is pretty well crowded out by the mohair. In the less expensive goods the tapestries are very strong, and it is probably true that the yardage of tapestry sold for covering over-stuffed furniture is greater than the yardage of mohair used for the same purpose. Velours are shown to some extent, and some buyers see in them a very strong competitor of tapestry. They offer a very attractive appearance at a price, but of course lack the wearing qualities of mohair or good tapestry.

Mohair suites are shown for the most part in combination effects of plain and figured goods with very pleasing results. A suite covered entirely with the plain material lacks life, while an all-figured suite is all high-light, so to speak, with nothing to relieve it and set it off. The manufacturers are standardizing their combinations according to numbers. One of the largest firms has three combinations—Nos. 1, 2 and 3. No. 1 is all plain, with the exception of the cushions, the bottom rail along the front and the facing of the arm moulding. No. 2 is the same as No. 1, except that the inside of the back is in the figured material. No. 3, from the front view, is all figured, with the exception of the facing of the arm mouldings and the portion between the bottom rail and the seat; the outside of the arms and the rear are in plain material.

Wing Arm and Low-Back Chairs

The rocker no longer belongs to the chesterfield suite. Some say it never did belong there, because not suited to that heavy type of construction. A chesterfield rocker that is so balanced that it looks right when unoccupied is rather inclined to throw one forward on his face when he sits down in it, while if it is properly balanced for the comfort of the sitter it tilts backward when he rises and looks like a stub-by trench mortar aiming at the moon.

Hence we see at the exhibitions the wing-back and low-back chesterfield chairs, almost exclusively, which suffice for the comfort of the most luxurious and exacting.

Many Fine Displays of Rattan Furniture

The makers of reed and rattan furniture are not inclined to hide their light under a bushel. Their displays at the exhibitions were among the most striking and effective shown and evidence a strong confidence in the future of their product. Suites were displayed in great variety both of finish and covering. Ivory, blue, grey, gold, bronze—all these are set before the buyer's eyes in tempting array and not without effect. Brown rattan is of course a bread-and butter staple, but the more lively finishes show signs of developing into something more than a passing fancy. Buyers state that they are going "big." Cretonne appears to be the most popular covering, particularly on the light finish suites. Tapestries are also seen, of course, for the most part with the brown rattan ,and in the cheaper grades chintzes find their place.

Fibre Lines Shown

It is particularly interesting to note that one of the large manufacturers of reed furniture was showing quite an extensive line of fibre goods. This manufacturer looks upon fibre as the coming material for the production of this class of furniture. He points out that it has the appearance and the wearing qualities, and that fibre is a raw material of which Canada has an almost unlimited supply, whereas cane has to be imported. Buyers admit all this, but say that the public has a prejudice against anything in the nature of a substitute, and for that reason fibre furniture is more difficult to sell.

What Is Mohair?

A General Description of the Manufacture of This Popular Furniture Covering—Its Weaves and Wearability

At the present time mohair is a very popular furniture covering and a great deal of it is being displayed in the exhibits. Just what mohair is, however, is not quite clear in many people's minds and in view of enquiries from some upholsterers who are in doubt concerning some phases of the mohair question, the following general explanation has been prepared.

Genuine mohair is made entirely from the hair of the Angora goat, with the exception, of course, of the cotton backing or base. If there is any admixture of worsted or cotton then it is an imitation mohair, not the genuine article. We may say, however, that wool, silk, etc., is sometimes introduced in a mohair covering to produce a pattern. That is to say, stripes of worsted material are incorporated in the mohair for

the purpose of securing a certain effect. The reason for this is that wool and mohair will respond differently to the same dye, and when taken from the dye vat, the worsted material will show up a different shade, thus producing a stripe, or other pattern.

Genuine mohair of the highest grade cannot be excelled for wear by any other upholstering fabric. As a matter of fact it is claimed that it will wear almost indefinitely.

Difficult to Distinguish Grades

It is extemely difficult for anyone except an expert in fabrics to distinguish between the different grades of mohair, particularly after it is applied to the furniture and the backing covered up from sight. There are two weaves in general use to-day. In one the mohair is so interlocked with the cotton backing as to be practically secure from ever pulling out. In the second, a much faster process, this interlocking feature is omitted and a double backing is applied to give it a firm bearing. Other things being equal, the first mentioned process of course, produces a fabric superior from the standpoint of wear. Another factor enters into it, however, namely the quantity of mohair used; the more closely the mohair is packed on the looms, the better the quality of the product.

As far as brocading, block-printing, etc., are concerned, these are simply added processes which have to do with the appearance of the fabric. First, there is embossing, which is the production of a pattern by pressing part of the pile flat, leaving the remainder standing in a figured outline. The brocading, as it is called, is a further process. In this case, as with the embossing, the pile is first pressed flat in a given pattern. Then the fabric is passed through a machine which cuts the standing pile off short, and finally the goods are steamed, which raises up the pile which had been pressed flat to its original condition. Block-printing is coloring done by means of a pattern cut out in wood and printed on the fabric. There is both hand work and machine work. The process is expensive and complicated and we understand that there are very few plants on this continent equipped for carrying it out.

Mohairs are manufactured in Canada, England, the U. S., and several European countries, including Germany and Belgium. There is only one plant in Canada making this material. So far as the rating of the different countries is concerned, there is of course some difference of opinion. We think it must probably be admitted that the highest-grade mohairs of continent cannot be excelled. The Canadian company is making a fine material. The British manufacturers, in general, we are informed, use the double-backing process, but nevertheless produce a very excellent grade of goods at a price that creates keen competition for the U. S. manufacturers.

Any genuine mohair will give excellent service. The way an imitation is most easily detected by a layman is in the brushing. Dirt brushes right out of a genuine mohair, leaving it fresh and clean, but not so where there is a worsted admixture.

How Costs Can be Saved in the Cutting Room

More Co-operation Between the Buying, Designing, Cutting and Upholstering Departments Would Lead to Better Results—Many Ways of Saving Material and Money if Ingenuity is Used

Keener competition and the desire of the manufacturer to bring into the homes of everybody furniture of excellent quality, design and style at reasonable prices make it necessary to look closely into the manufacturing costs, writes Rene Sulk, in "The Furniture Manufacturer and Artisan." The manager who thinks logically will study first the cost problem of the department which contributes the highest percentage to the general cost of the article produced. This in the upholstered furniture industry undoubtedly is the cutting and covering department.

Buying, designing, cutting and upholstering are so closely interwoven that only the closest and most harmonious co-operation of all these four departments can produce the most efficient and economical cutting and handling of coverings. The co-operation has to start at the buying end. Many buyers do not pay the slightest attention to the size of the patterns (designs) of the fabrics they are buying, while it really is of paramount importance. Every furniture manufacturer now carries at least six to seven and more different sized patterns of coverings in stock. A great deal of trouble and loss of material could be averted by buying only two or three sizes of patterns and to consult the cutting room foreman before new goods are bought. The buying of covers with similar sized designs allows, firstly, machine cutting, and, secondly, the use of life-sized cutting patterns and so saves considerable labor expense. This is of great importance and should be gone into very carefully by the factory manager.

Most designers of coverings are also deficient in this matter, paying more attention to the beauty of the design instead of giving the main attention to its practicability. In most cases the designers do not possess the practical knowledge of special requirements for our industry and such should be furnished by the furniture manufacturer. Art should make utilitarian things beautiful and has a great mission in the furniture covering industry. This co-operation between the practical furniture man and the designer of coverings is not as close as it should be. So also not enough attention is given to the co-ordinate workings of the four departments mentioned at the beginning of the article.

No Attention to Practical Side

Whenever a sample season approaches and a new sample is made, the manager, designer, cutting room foreman, as well as the man in charge of the upholstering department, should be present while it is being upholstered. Such a concerted study will bring out valuable suggestions and surely show weaknesses which otherwise would not have been found out and prevent a great deal of trouble later on. While the work is being done the patterns for the cutting room should be on hand and necessary corrections made right away. There are always ways and means to save two inches of covering by changing the construction of the frames a little bit, and that is one of the main reasons why the designer of furniture should also be present. If changes in the construction are necessary, they should be taken care of immediately

(Continued on page 92)

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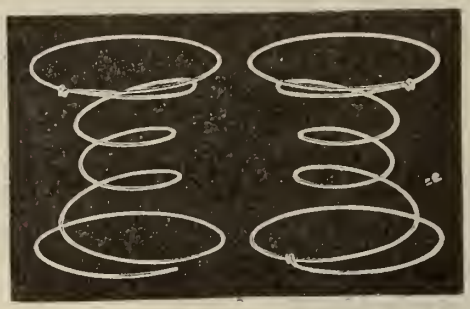

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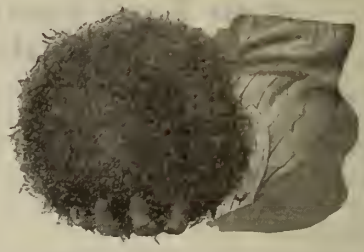

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Do you ever try keeping a file of your back copies of the "Canadian Woodworker"? Try it. Start with this issue. There are many articles that are worth keeping, as they offer valuable suggestions that will help you in your business.

Finishing to Prevent Warps

Shrinking, Swelling, Checking, Open Joints and Deformities Are Partially Due to Finishes that Are Not Moisture Resistant

By A. Street

What constitutes a moisture resistant finish for articles of wood, or is such a finish available? It is not uncommon to find those that hold that an application of oil or a coat of paint or varnish renders the objects coated impervious to moisture. Such is not the case, as is evidenced by the shrinking, swelling, twisting, checking and open joints which occur in finished furniture and woodwork of all kinds.

Within reasonable limits the application of any substance that would form a waterproof coating around the wood so that the moisture which it contains would be neither increased nor diminished, regardless of surrounding conditions, would prevent any change or movement in that wood. Suppose a piece of furniture were to be finished so that the surface would be absolutely waterproof; such furniture could be immersed in water, exposed to rain or dampness or to low humidities without producing any change in the moisture content of the piece and in consequence, without resulting in any change or movement in the wood.

Treating Wood as it Comes From Kiln

As wood changes its shape, warps, shrinks, checks, etc., only when it is giving off or taking on moisture, the development of some such finish would be a boom to the wood-using industry, for it would mean that as soon as an article had been manufactured to the point where such a coating could be applied all further danger from moisture-caused troubles would be eliminated. Better still would be the development of some treatment that could be applied to the wood as it comes from the kiln and which would render it impervious to moisture changes. Such a treatment would remove many of the problems now encountered in the manufacture of wood.

Some day some such finish or some such treatment will be developed but as far as present day finishing materials and methods are concerned, we must recognize the influence of moisture and combat it according to the knowledge we command. The Forest Products Laboratories at Madison, Wisconsin, recently issued some figures covering the comparative moisture resistant property of various finishing materials. These figures, which tend to prove that a waterproof finishing material, as finishing materials are known and classed in woodworking, is not available, are based on a comparison of the amount of moisture absorbed by coated and uncoated samples and in reality indicate the relative percentage of the moisture resisting quality of the various materials as indicated by the moisture taken up by uncoated samples.

Finish	Per Cent Resistant
Aluminum-leaf process, asphalt paint base	98
Three coats spar varnish coated with vaseline	98
Three coats of asphalt paint	96
Aluminum-leaf process, spar varnish base	95
Aluminum-leaf process, cellulose lacquer base	94
Aluminum-leaf process, oil paint base	93
Three coats of aluminum bronze (quick drying)	92
A heavy coating of paraffin	91
Three coats of rubbing varnish	89
Three coats of enamel	88
Three coats of orange shellac	87
Three coats of cellulose lacquer	73
Sheet pyralin, 5/1000 inch thick, glued to wood	68
Three coats of graphite paint	61
Three coats of spar varnish	60
Three coats of white lead oil	54
Five coats of linseed oil, applied hot, and two coats wax	38
No coating	00

Since we cannot finish so that the article is entirely impervious to moisture the next best thing is to finish each article so that all surfaces inside as well as outside, are equally moisture resistant. Suppose a table, dresser, or buffet top were heavily varnished on the upper side and the underside left untouched or given a thin coat of stain, what happens? The coat on the under surface is not as moisture resistant as the heavily coated upper surface and as a result it responds more quickly to changes in surrounding atmospheric conditions. During damp weather the poorly protected underside picks up moisture, it expands, and as a result the top cups. This movement is such that often the fastenings give way at one edge and the top warps badly. Had the under surface been given the same treatment as the top side or rendered equally moisture resistant this warping would not have occurred. The same holds true with regard to panels, cabinet doors, drawer fronts and wood surfaces of all kinds.

Could Paraffin be Used?

Contrary to the opinion commonly held linseed oil does not offer much resistance to the penetration of moisture but a good coating of paraffin does. Could paraffin be used to advantage as a coating for the interior of case goods and for unfinished or partially finished surfaces of woodwork of all kinds. The subject is an extremely interesting one and not without its value. For this reason a discussion of this phase of the finishing problem would be both interesting and valuable. As a suggestion, I understand that in ship-building, particularly passenger vessels, the back of all woodwork and panelling is given a heavy coat of asphaltum or pitch. This substance could not be used on many forms of woodwork including furniture but the idea is well worth considering and discussing.

Makeshift machinery is sometimes of value when it is designed for special work. When it takes the place of the usual woodworking equipment, then it is of little value to the owner or the workman.

Artificial Drying of Paint and Varnish

By the Employment of Mechanical Devices, It Is Possible to Dry Siccative Coatings More Rapidly than by Natural Means and Under Conditions More Uniform and Better Controlled

By R. E. Lippert

In this article based on a paper submitted to the American Society of Mechanical Engineers, the author describes a process for drying coats of paint and varnish more rapidly than is possible with natural means, by adding heat and moisture simultaneously to the air surrounding the siccative coatings, through the employment of mechanical devices. The use of a fan and conditioning equipment to produce air circulation allows the process to be adapted readily to modern factory-schedules.

Atmospheric conditions suitable for drying are discussed at some length as being a composite of sensible temperatures and relative degrees of humidity, and several humidifying devices are described and illustrated. Color control of paint by this means of drying is mentioned.

Paint and varnish will air-dry successfully, because air always contains some moisture and some degree of heat, but successful air-drying depends entirely upon storage facilities, weather conditions and other factors. The drying time varies with atmospheric conditions and, since it does vary, there must be at least one definite condition under which a certain grade of paint or varnish will dry most rapidly and successfully. When such a condition is once established, it should be maintained uniformly throughout the entire drying period, and it should be possible to duplicate the condition and eliminate the element of chance whenever and wherever desired. Nature herself may, somewhere and at some particular time, furnish weather conditions somewhat approximating the degree of heat and moisture required to dry paint and varnish properly, but the most favorable and most unusual of such natural weather conditions are variable, of short duration and of unforeseen termination. Moreover, so many different grades of paint and varnish exist, containing such varying proportions of oxidizable oils, that it is manifestly impossible to establish one standard ideal atmospheric condition for drying each of them, and it is absurd to expect nature to comply with so many different sets of specifications. Thus the necessity arises for supplimenting natural atmospheric conditions with some artificial means of (a) establishing an ideal drying atmosphere at will, (b) maintaining such an atmosphere uniformly for the drying period and (c) being able to duplicate or vary this condition as desired.

Moisture as Important as Temperature

Unfortunately, atmospheric conditions are measured not only in degrees of temperature, but also in percentages of relative humidity. The mere fact of maintaining a uniform temperature does not presuppose a uniform relative humidity, unless means are provided for adding moisture and controlling such additions by proper mechanical devices. The moisture content of the air is fully as important a factor in the drying of siccative coatings as the temperature of the air itself. When the idea of artifically drying paint and varnish was first conceived, it was the general belief that moisture would retard rather than hasten the drying process. Several years of earnest endeavor was required to prove the contrary. In fact, the true value of humidity was not appreciated even after several installations of humidity-equipped drying-systems were made and tried. Its only then-apparent value to the trade was to prevent surface or so-called case-hardening but, as a matter of fact, the main reason for adding moisture is that the moisture acts as a catalystic agent and co-operates with the increased heat in performing the chemical reaction of oxidization. This is the important function in the drying of any siccative coating, and it is entirely foreign to the purely physical evaporation of volatile solvents.

Humidifying Devices

Having established the fact that certain definite atmospheric conditions are not only desirable but necessary, and being convinced that nature can provide such conditions only on rare occasions, it becomes necessary to furnish the proper mechanical means for creating artifically suitable drying weather to produce a standard finish of good appearance and greater durability. If we concede the value of humidity, the simple installation of steam coils will not suffice, even if they are thermostatically controlled. Let us assume, for example, that a certain grade of varnish will dry perfectly in a dryroom having a temperature of 120 deg. fahr. and that a relative humidity of 42 per cent means that there must be 14.3 gr. of moisture per cu. ft. of air. To duplicate such a condition in a dryroom containing only steam-coils would necessitate an outside temperature of from 90 to 100 deg. fahr. with relative humidities ranging from 73 to 100 per cent. It is a matter of record, however, that in the vicinity of Cleveland, for example, the average moisture-content of the air ranges from about 1 gr. per cu. ft. in January to about 6 gr. per cu. ft. in July. But air at natural temperatures containing 1 gr. per cu. ft. when heated to 120 deg. fahr. will have only a relative humidity of about 3 per cent and even the maximum of 6 gr. per cu. ft. results in only a relative humidity of 18 per cent at that temperature, whereas 14.3 gr. is required to produce the desired results. Hence, some suitable means must be provided to make up the deficiency in the moisture content of the drying air if we propose to establish a uniform condition, and it merely becomes necessary to select the most suitable means.

We have tried and discarded a great number of humidifying devices such as water-pans, water-screens and steam-jets. Our best results have been obtained by the use of an indirect heating system equipped with a combination air-washer and humidifier. In this way we have not only obtained accurately controlled conditions of temperature and humidity, but it has been possible to eliminate dust,dirt, insects and other foreign matter from the drying air. This type or drying equipment consists of a motor-driven fan, an air-washer and humidifier, a series of steam-

coils or radiators, temperature and humidity controlling devices and a duct system for air supply, circulation and ventilation. The ducts are arranged in a suitable manner so that the conditioned air is uniformly distributed. From the standpoint of economy, it is customary to recirculate the air partially and hence two connections to the fan inlet are provided. To afford a concrete example of the action that takes place as the air passes through the machine let us assume that it is desired to operate a dryroom at a temperature of 120 deg. fahr. and a relative humidity of 42 per cent on a day when the shop temperature is 70 deg. fahr. and the relative humidity 33 per cent. Since the duct loss and diffusion within the dryroom will necessarily cause some heat loss, which is assumed to be 40 deg. fahr., it will be necessary to raise the temperature of the air from 70 deg. to a final temperature sufficiently in excess of 120 deg. to compensate for this loss and to increase the moisture content from 2.4 gr. per cu. ft. or 33 per cent at 70 deg. fahr. to 14.3 gr. per cu. ft. or 42 per cent at 120 deg. fahr.

It is desirable to recirculate part of the air; so in this case it is assumed that 50 per cent is fresh air from the shop and 50 per cent is air recirculated from the dryroom. From past experience we have found that the recirculated air will return at a temperature of about 112 deg. fahr., with a 14.3 gr. per cu. ft. moisture-content, and a mixture of the two when delivered to the air-washer will have a temperature of approximately 90 deg. fahr. and an actual moisture-content of approximately 8.3 gr. per cu. ft. This mixture then enters the air-washer. The air water comes into intimate contact with each other and any drop in temperature sustained here is made up when the air passes through the steam humidifier, which also completes the saturation. The air after passing the washer has therefore reached a temperature of 90 deg. fahr. and carries the requisite 14.3 gr. of moisture per cu. ft. It shows a relative humidity at this stage of 98 per cent, or practically complete saturation, and the only operation that remains is to rise the temperature to 160 deg. fahr., which is the desired dryroom temperature of 120 deg. plus the assumed duct and diffusion loss of 40 deg. This can be done without any loss of absolute humidity. The heaters are either cast-iron radiators or pipe coils fed by one common manifold. The steam supply system is equipped with a diaphragm valve that is operated automatically by an expansion thermostat located in the dryroom. When the air has passed the heaters it will be virtually at 160 deg. fahr., with only 18 per cent of relative humidity at this point, but the absolute humidity still remains at 14.3 gr. per cu. ft. and the final condition obtained in the dryroom will be correct both as to temperature and humidity.

Control of Humidity

We have found the most successful method of controlling humidity to be the dew-point control. The principle of its operation is that the amount of moisture that air can carry at saturation is dependent on its temperature. For instance, having determined that a relative humidity of 42 per cent at a temperature of 120 deg. fahr. is desired, we know that an absolute humidity of 14.3 gr. of moisture per cu. ft. must be provided. Our humidity tables show that a moisture content of 14.3 gr. per cu. ft. represents saturation at a temperature of 90 deg. fahr.; the dew-point for this condition, therefore, is 90 deg. and by simply setting the humidity control for that temperature the desired result is obtained.

Color Control

We have found that it is possible to establish an absolute color standard by this means of drying, even with the most delicate colors. The proper use of humidified air will eliminate the troubles resulting from off-color painting jobs, especially when using light blue, yellow, white or gray. Tests recently conducted with five different shades of blue demonstrated conclusively that the colors dried under proper humidity conditions could not be distinguished from those that were air-dried. Further, it was found that each one of the blue samples required a different relative humidity to produce the same likeness as was shown by its air-dried counterpart. For example, article No. 1 was dried with a relative humidity of 35 per cent at 130 deg. fahr. and showed a greenish overcast; but article No. 2 coated with the same varnish and dried with a relative humidity of 45 per cent could not be distinguished from the air-dried sample. Articles Nos. 3 and 4 coated with a different shade of blue and dried with a relative humidity of 35 and 45 per cent respectively were both failures; but were produced perfectly true to shade with a relative humidity of 55 per cent. A temperature of 130 deg. fahr. was used for all tests. We have worked out a table for practically all the known colors used in the industry. The only way to dry such colors successfully is to establish a schedule of temperatures and humidities that can be duplicated whenever required.

Varnish Hints

There is a great difference in the quality of varnishes, and everybody is well aware that a good job can be done only with the best make.

While spirit and volatile oil varnishes have their restriced uses, they must not be looked upon as true varnishes for finishing off exposed surfaces. These varnishes are cheaper in the market than the fixed oil varnishes, and their use in any work might save money to the worker, but in the end they would prove very expensive.

Assuming that the best varnish is procured, the finisher must understand the art of using it so as to obtain the best results. Varnishing a wood surface properly is not "child's play," as many suppose,, and a good many bad jobs are done simply through the ignorance of those who apply the varnish. For instance, hurried work is more fruitful of poor results than the use of poor varnish, and carelessness and ignorance are chiefly responsible for the rest of the poor jobs.

The skill of the painter in applying varnish depends a good deal upon the right application of the different grades of varnish to the right job. Floor varnish, for instance, must be extremely tough and elastic, because anything short of this will only create disappointment in results. The use of ordinary furniture varnishes for floor purposes means chipping and cracking, and in a short time the floor is spoiled. Good floor varnish will not show a scratch, but simply a dent when hit by a blow or with the heel.

It is in the outside, exposed treatment that most failures are recorded in varnishing. An interior varnish is sometimes used, and as a result the surface soon gets sticky and wears off.

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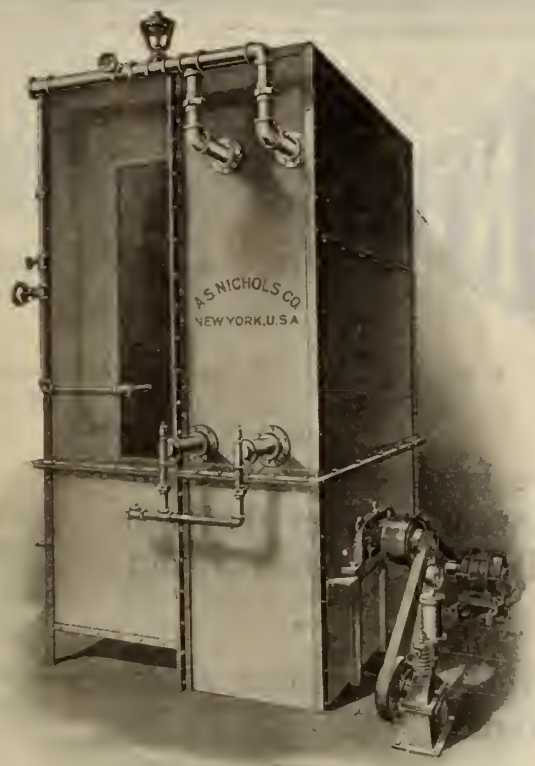

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Large Proportion of Veneer that is Purchased is Wasted Because Proper Provision is Not Made for its Storage

By H. V. Addison

Of the hundred of thousands of dollars' worth of veneers that are purchased annually by Canadian wood-users how much actually gets into production? The above question was recently put to a buyer of veneers in large quantities and his reply was that about fifty per cent of all that is purchased is wasted. That estimate is apparently high, but undoubtedly the loss and waste is enormous in many plants. The most serious feature is that a large part of this loss is preventable. An organization that tolerates a loss in one department or in connection with some one line of raw material should be checked up closely for the same laxness is bound to show in other directions.

Of all the losses which occur in the utilization of veneer those due to careless handling and poor storage facilities take a large toll and are perhaps the easiest to prevent. How often have you gone into the veneer department of a plant only to find veneer stacked all over the place—under the benches, in racks, overhead, piled in out-of-the-way corners, in fact wherever it was convenient to drop a bundle or two. In about the same class is the plant that utilizes the loft of some barn or stable or some little used, out-of-the-way part of the plant as a storeroom for this valuable stock. Here the material is subjected to dampness and moisture, and is often exposed to outside conditions on account of broken windows and leaky roofs. Under such conditions, and they are not uncommon, buckling and end checks, stain and moulds take a heavy toll.

Accessibility is Essential

It might be well to outline what constitutes good veneer storage facilities. First and foremost the space selected for storage space for veneers should be readily accessible, light and dry, and well ventilated. These features are only the bare essentials, the minimum requisities that should be considered. Accessibility is desirable, for unless the material is close at hand a tendency to bring in more than required, so as to save another trip to the storage, will soon develop and gradually the veneer department will assume the appearance of the warehouse with left-overs piled here and there where space is available. Another point is that unless the storage place is readily accessible the stock will not receive the attention it deserves or should receive.

What about light? What has light got to do with the storing of veneers? Only this, that where light is lacking neglect and carelessness are bound to exist. The best way of ensuring that the veneer is properly piled and tabulated is to make sure that the storage space is well lighted.

The necessity for freedom from dampness and for ventilation is too widely recognized to require any lengthy discussion. An excessive amount of moisture will cause buckling, mildew and mould, all of which tend to increase the storage loss. These features are aggravated by poor ventilation.

Importance of Moisture Control

It is not difficult to call to mind a number of plants in which particular pains are taken to provide adequate storage facilities for the stock of veneers. The material is kept in neat, orderly piles, or in racks in a dry, well lighted space. The material is all carefully piled and indentified by suitable tags. Even here, however something is lacking and that lack is usually recognized by the management. Not long ago while going through a plant I noticed that the floor of the veneer storage was wet. Upon asking the reason for this I was informed that the stock was becoming too dry and in consequence they were experiencing a high breakage loss. To overcome this tendency it was their custom to sprinkle the floor at frequent intervals. The feature that was lacking here and which is lacking in the majority of plants is moisture control. By storing the veneer in a dry, well lighted room and controlling the humidity and temperature the most satisfactory results are secured.

This is only reasonable when one stops to think of it. If the veneer becomes dry and brittle while in storage the loss from breakage is extremely high because the wood is brittle. On the other hand if the storage quarters are damp, not only is there danger of loss from stain, mildew and buckling, but the excess moisture must be removed before the stock is glued, necessitating a re-drying operation and so much added expense. Controlling the temperature and humidity in the veneer storage room would not only eliminate all losses due to exposing the veneers to conditions which are not as they should be, but would do away with the necessity for re-drying and would save that expensive operation.

Conditions Under Control

In many of the more progressive plants this idea has been adopted in its entirety. The veneer storage is a type of kiln in that both humidity and temperature are under rigid control. These conditions are held constant at predetermined points with the result that the stock is dried to and held constant at the desired moisture content. After the storage has once been equipped for such control a few automatic instruments can be used to regulate conditions and hold them constant. This eliminates any supervision expense and ensures satisfactory results. When this idea is adopted not only does the plant owner know that he has reduced the factor of veneer waste but he also knows that the material is always dry and ready for use. Further he has every assurance that it is uniformly dry so that he can depend upon securing uniformly satisfactory results at the gluing and

laying operation, or rather know that should trouble develop, the moisture content of the veneer was not at fault.

It costs little, if any, more to do a thing properly, to adopt the one best way. When that is done there is not only the satisfaction of doing things right to be enjoyed but there is the saving to consider which is affected through the reduction of waste and the elimination of one operation. It pays from every standpoint to be up-to-date and to be always on one's toes to keep ahead of the other fellow or of competition.

Precautions in Laying Crotch Veneer

The Constant Tendency for the Wood to Split is One of the Big Difficulties that Requires Careful Handling from the Preparation of the Core Right up to the Storing of the Finished Stock

By A. M. Hall

The laying of what is known in the trade as crotch veneer has always introduced a number of problems more or less difficult to solve. Experience, however, has enabled many veneer men to find a satisfactory solution to these problems. The great difficulty with this wood has been its tendency to split and check, and it seemed to be almost an impossibility to handle it successfully without splitting it.

To lay crotch mahogany successfully great care must be exercised right from the beginning of the operations. The surface of the corestock must be prepared carefully. It must be perfectly level and free from uneven spots. Corestock for crotch veneer should always be crossbanded, and in no case should the attempt be made to lay the crossbanding and the face veneer together.

After laying, give the crossbanding ample time to dry out thoroughly. Then run the crossbanded cores through the three drum sander to prepare them for the application of the face veneer. If a scraper is included in the equipment of the plant it can be used in place of the three drum sander. The scraper is a machine that is coming into its own again. It has been cast aside for some years, in some plants, for some reason or other, but its many good qualities where veneered work is concerned, both in the matter of preparing corestock before and after crossbanding and in cleaning up the face veneer for finishing, have brought it back into favor, and many scraping machines that have been reposing in outhouses and basements are being cleaned up and put into service.

Rotary-cut Crossbanding is Desirable

The crossbanding for crotch should be about one-twentieth of an inch thick, and in no case is it necessary to use crossbanding more than one-sixteenth thick. We always use rotary-cut crossbanding, mostly poplar, which we buy in quantities for all our veneering. The main object in adhering to the thinner stock is that thin crossbanding is less likely to be ruptured as it is peeled from the log by the rotary process. This makes it much more desirable for laying crotch because this stock is sufficiently given to checking without holding out an inducement for further checks to appear by having checked or split crossbanding.

There are still those in the veneering trade who swear by the toothing plane for preparing cores, both before and after crossbanding for the face veneer. When I first started to work in a veneer room the corestock was placed on the bench and toothed from corner to corner with a hand toothing plane. This operation was repeated after the cores were crossbanded. Then some genius conceived the idea of putting a toothed knife in a planer for the last operation on the core stock. I have never been able to see the advantage of this toothed knife. I did not quarrel with the hand toothing method on the bench except when amateurs were put on the job. I have seen some of these at work and a dull toothing plane meant nothing to them. When the plane ceased to make grooves or scratches, for want of sharpening, the users simply tapped the iron out a little further, with the result that instead of being toothed, the stock was ploughed full of furrows. Where any benefit is derived from this method of preparing corestock I am unable to see.

Where the three-drum sander or the cabinet scraper is employed to surface the corestock, the thinnest crotch veneer may be laid with perfect safety. And I would like to mention here that I am a firm believer in having this stock cut thin by the veneer manufacturer. It seems to me that the thinner it is cut, the less liable it is to be ruptured in the handling preparatory to laying, or in the laying itself.

Drying of Crotch Veneer is Difficult

Some veneer men fall down badly in the drying of crotch veneer. Here is one case where a redrier of the plate type is a welcome piece of equipment. The grain of crotch mahogany seems to run in every conceivable direction, and this kind of veneer is particularly troublesome due to the fact that it buckles badly when being dried. The difficulty is to dry it and keep it straight until the time arrives to put it in the press. Many have followed the practices of damping the veneer and placing it between hot cauls, usually putting a weight of some kind on top to keep the cauls in contact with the veneer. That is a poor way to handle it as it will split in many places almost always. The difficulty is that the weight on top prevents the veneer shrinking as it dries out, and therefore it splits. The veneers in between the lower cauls in the pile will split for the same reason, the weight of the cauls above, in addition to the top weight, making it impossible for them to shrink as they dry out.

I have seen many articles on veneering subjects which advocate putting veneer "under pressure" between cauls to dry it flat. Well, I have tried that "under pressure" plan numerous times with disastrous results. At first I could not understand it and decided that the pressure was not sufficient. I, therefore, increased the pressure with the idea in mind that I would hold the veneer so tight that it

(Continued on page 88)

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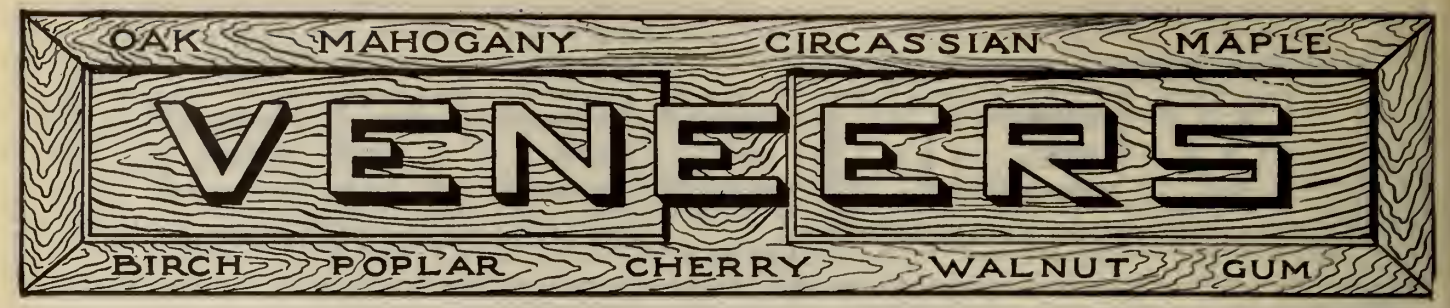

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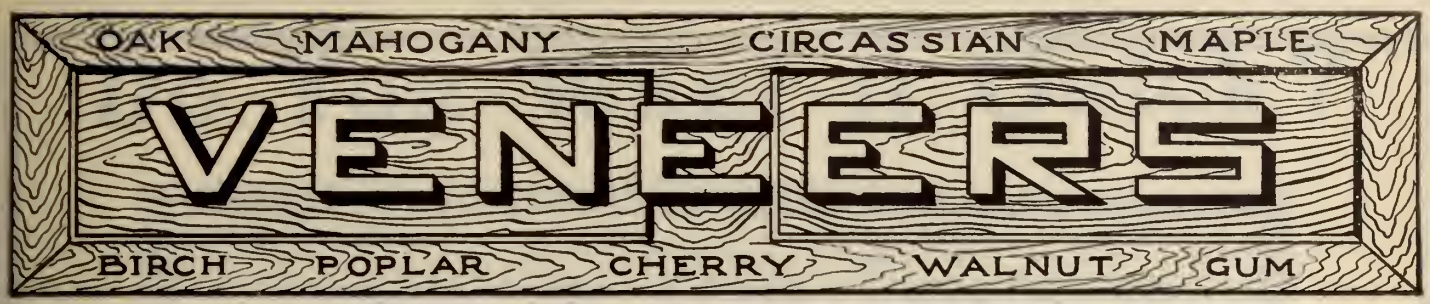

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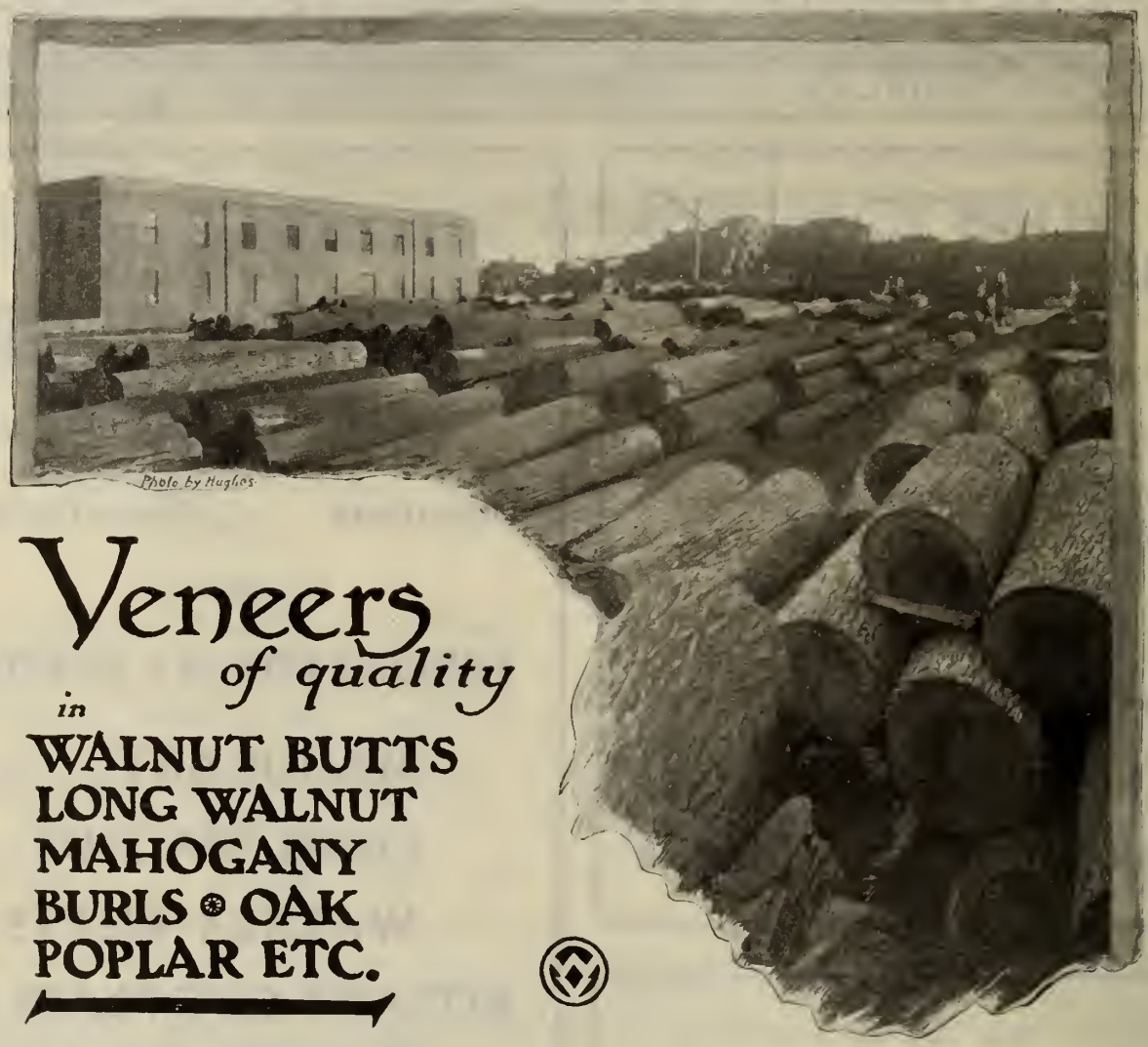

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Precautions in Laying Crotch Veneer

(Continued from page 82)

could not split. Foolish idea! When I stopped to reason the matter out it became quite apparent why it split. When veneer is being denuded of moisture, it must shrink; if it cannot then it will split. That is all there is to it.

To overcome the splitting tendency, then, I adopted the plan of using just a few cauls at a time and just sufficient weight to press the veneers flat, removing the weight when the shrinking process began. You cannot get the veneer as flat that way, but you can prevent it from splitting while it drys, which is more important.

Laying the Veneer

With the corestock properly prepared and the veneer flat and dry, the laying operation is not difficult. If it is necessary to do some matching and jointing, be sure not to allow too much moisture to come in contact with the veneer when taping the joints. Better use prepared tape, which requires a minimum of moisture to moisten the adhesive, in preference to gluing a strip each side of joint with hot glue and affixing the tape.

As there is a great deal of end grain in crotch veneer it would be well to examine the veneer to make sure that all splits or breaks are held secure with tape. These breaks will do no harm provided they come together close so they will show no defect in the finished work.

Always dry the veneer before taping the joints. There are veneer men who do the taping first and the drying afterwards, but it is a mistake. Crotch veneer is different from any other veneer in that it does not shrink or swell uniformly. This is the cause of the buckling which occurs with crotch veneer. If you take a piece of dry crotch veneer, cut the edge perfectly straight and then wet the piece along the straight edge, you will find that your joint has been spoiled. The same thing happens when you tape your joints before drying the veneer.

Therefore, always dry your veneer before taping the joints if you want to protect your joints from opening up. Where crotch veneer is very dry, it becomes about the most brittle substance that one could imagine and accordingly requires careful handling. Great care should be exercised in this regard. Some fellows are expert at handling large brittle sheets of veneer, while others are sure to cause destruction. To avoid any possibility of trouble, the veneers when prepared for laying should be placed between boards and placed where they are out of danger from being uupset.

Where there is much of this class of veneer to be handled there is only one way to do it properly and that is with a redirer. The peculiar breathing movement of these machines, introducing heat, moisture and pressure in such a judicious manner, makes them the envy of the man called upon to handle brittle veneer without one.

Preventing the Veneer From Curling

In laying crotch mahogany veneer on the cores and putting the cores into the press great care has to be exercised to keep the veneer from curling up. If it ever starts to curl before you get the caul on top of it, you are in for trouble. A good plan is to have some thin boards to lay on the top of the veneer. This is particularly true where the cores are large and the cauls heavy, such as grand piano tops. By placing a thin board on top of the core in the press the caul can be slid into place without damaging the veneer. Then the board can be removed.

Never commence to put a batch of this stock in the press without having everything in readiness. If the moisture from the glue gets an opportunity to enter the veneer, it can cause a lot of trouble. When the glue is applied to the covers it should be allowed to stand for a short time so that the surplus moisture can find its way into the crossband and the core. Then when the veneer is laid on the cores they should be got into the press and under pressure just as quickly as possible. Therefore, if everything is not in readiness, the delay may give rise to a lot of trouble. not only immediately but later on when the stock is in the finishing room. If excessive moisture from the glue enters the veneer after the fibres of the veneer are securely in contact with the core, this moisture will affect the fibres in such a way that it will form checks in the veneer.

Glue must, of course, contain a certain amount of moisture in order that it will have the liquid properties necessary for spreading, but after it has been spread on the cores as much moisture as possible should be permitted to soak into the cores before the veneer is laid. And in handling veneer of this kind much is to be gained by veneering only a few pieces at a time. No object will be served by filling the press right up before putting on the pressure, because the hot cauls loosen up the glue and the bottom pieces will absorb some moisture before the pressure is applied. And just as soon as they absorb this moisture the swelling process starts.

Where the equipment contains an hydraulic press and retaining clamps, nothing is to be gained by putting in large batches. It is much better to put in a few pieces, apply the pressure and then attach the retaining clamps and repeat this operation until the stock is all under pressure.

Storing the Stock

When the stock is taken from the retaining clamps on the following morning it should be piled away between strips just as quickly as possible. If stock is left lying around after it is taken from the press, no complaint should be made if it warps. And, needless to say, the strips used for piling should all be of exactly the same thickness.

In connection with the suggestion that a thin board should be used on top of the veneer to hold it flat and for sliding the caul on when the stock is large, I would like to add that the board should always be removed. I say this advisedly, because I once saw the board left in when the last caul was put in place, with the result that twelve tops for grand pianos were ruined. The press would not go down evenly, and the reason was not discovered until the morning when the stock was removed from the press. Neeedless to say no one would accept the responsibility.

With the Walnut Manufacturers' Assosiation

At the annual meeting of the American Walnut Manufacturers' Association held in Chicago on January 18 the following officers were elected to serve during the ensuing year: W. H. Day, President, Wood-Mosaic Co., Louisville, Ky.; Alex Schmidt, Vice-President, Kosse, Shoe & Schleyer Co., Cincinnati, O.; J. C. Rodahaffer, Treasurer, Penrod Walnut & Veneer Co., Kansas City, Mo.; Geo. N.

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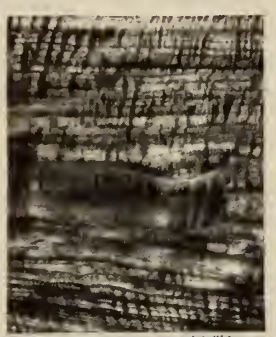

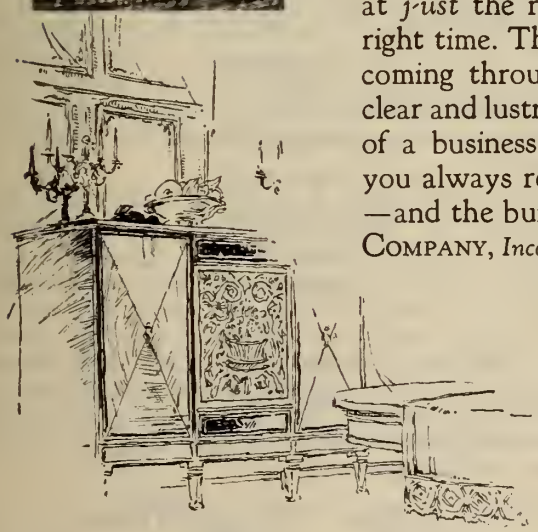

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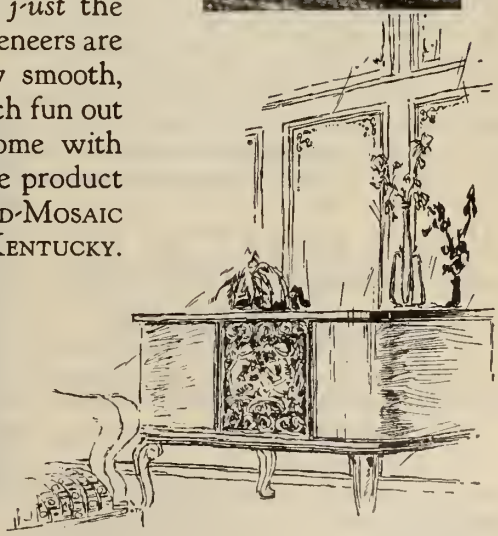

Lamb, Secretary, 616 South Michigan Blvd., Chicago.

The discussion of conditions in the walnut industry revealed the fact that the supply of walnut has been fully maintained during the past year and the prospects for the coming year are that a sufficient quantity would be available for all needs. Logging conditions have been particularly favorable due to the open winter, and all the mills have been running to capacity. The transportation situation has greatly improved and cars are now available for both incoming logs and outgoing shipments of lumber.

Geo. N. Lamb, secretary, made a full report of the progress of the Trade Extension work in popularizing American walnut. In substance Mr. Lamb's report was as follows: The results have been very satisfactory and particularly during the past year has the interest in American walnut become very great. In the field of interior woodwork a large number of the best architects of the country have been using walnut for interiors in homes, clubs, theatres, hotels, churches, stores, offices, banks, and apartment houses. The use of walnut in office furniture has greatly increased and it is now possible to purchase good walnut furniture from the stock of retailers rather than to have it made on special order. In window backgrounds for the better class of stores and shops walnut has been almost exclusively used during the past two years.

The use of walnut in the automobile industry has also greatly increased, instrument boards and body trim in walnut now being used in the better grades of cars.

In furniture the use of walnut has materially increased in living room furniture, also in novelty and gift furniture. During the past year walnut also maintained its big lead as the popular wood in bed room and dining room furniture.

The association officers have been swamped with requests for information in regard to walnut and hundreds of thousands of pieces of literature have been distributed. Many thousand circulars have also been distributed directly by furniture retailers in all parts of the country. The members feel that the educational work has been well worth while and plan to continue and increase it.

Some Important Points in Glue Spreading

Fault is Often Found with the Use of Glue Spreaders but in Most Cases the Trouble Lies With the Operator and not with the Machine—A Glue Spreader Must be Properly Selected to Suit the Work to be Handled

By R. O. N.

When we take into consideration the fact that glue is an adhesive that naturally will stick to almost anything with which it comes into contact, it would seem that the process of glueing is one of the simplest items in veneering procedure. However, that the act of veneering consists of vastly more than is often surmised, and is of vastly more importance than some contend it is, can easily be observed, when we take the present method of glue spreading into consideration. In fact, the most important process of the entire glue room work is the spreading of the glue upon the stock in such a manner as to insure a first-class product, considering the strength of the glue joint and the economical use and cost of glue spreading.

In the process of glue spreading, as in many other things, there is a right and wrong way of doing the work. Thus we often observe many a modern equipped glue room turning out at best only a second rate product, while on the contrary the most neglected glue room, as far as equipment is concerned, will often turn out a far superior product. Thus it may be concluded that modern veneering equipment is of little avail unless this is backed up by proper operation.

There are many plants in operation to-day in which little, if any advantage is taken of these modern devices even after they have been provided by the management. One of these devices is the glue spreader, and we are often told of many imaginary faults of the glue spreader, which, in fact, are not the faults of the machine but of the human element back of it.

Objections Made Against the Glue Spreader

One of the arguments generally advanced by some glue room men against the glue spreader is the inclination of the spreader rolls to cause glue foaming. This, however, is not the fault of the machine or the glue. On the contrary, cause of this occurrence is generally with the operator who should be held accountable for the trouble, for in the majority of instances of this kind it will be found that the foaming can be traced directly to the carrying of too much glue in the spreader troughs, with the result that the rolls working deeply in the glue will agitate it to such extent as to often cause even the highest grade of glue to foam. Glue of itself will very seldom, if ever, foam in the glue spreader if only a sufficient quantity to properly supply the rolls is carried.

Another argument often advanced against the glue spreader is that there is excessive glue waste on close-grained woods and starved joints in porous or open-grained woods. This, however, is a mere fallacy. It is true that glue starvation does occur at times in brush as well as machine application of glue, but this is not the fault of the machine but of the operator. If a careful record were kept as to which method produces the most starved joints or loose veneers, the hand brush would undoubtedly head the list by a large margin.

As regards the waste of glue I do not believe that anything can beat the hand method in this regard. While it will naturally happen once in a while that the operator of the spreader will err and produce a bad joint, the operator with the brush is liable to err much more easily, as instances are on record where a whole day's production of work has blistered when the glue was not properly spread with the brush. The chance for turning out bad work is therefore much greater where glue is applied with the brush than with the glue spreader.

Control of Speed Will Save Trouble

In instances where trouble really occurs with the glue spreader the fault can mostly always be elim-

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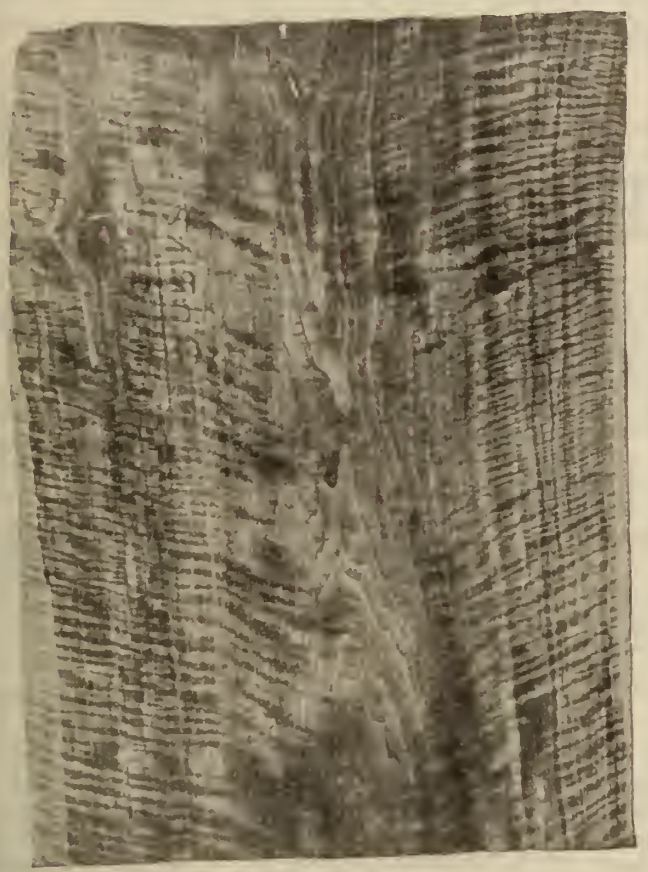

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The pirate's chest was of crumbling oak, bound with rusty iron, its lock intricate, its hinges curiously wrought. But nature hides securely within rough brown bark the gold of Oak and Satinwood, the silvery sheen of Bird's-eye Maple, the mysterious workmanship of Walnut and Mahogany engraved with enchantments like a sorcerer's sword.

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inated by running the spreader at the proper speed. Thus, if the rolls revolve too slowly, the spread of glue will be too thick, while too fast revolving of the rolls will result in too thin a spread of glue. If the fault cannot be obviated in this manner it is well to consider the temperature, the quality and the thickness of the glue used. All of these are factors that may be indirectly responsible for some of the troubles that may be experienced at one time or the other.

The manufacturers of glue room machinery are producing glue spreaders, each type distinctly for a certain requirement. Some of these have thread-like corrugations cut around the rolls, some have them lengthwise, while some have coarse corrugations, others have fine ones and still others have smooth faced rolls.

In the selection of a glue spreader it would be well to take into consideration the following factors. If the glueing that is to be done is on both soft and hardwoods it is well to purchase a spreader that is adaptable to spread glue properly on your softwoods. If you should judge your glue spreading according to the absorption quality of the hardwoods only, you will discover that the absorption powers of the softwoods are such as to absorb the glue and you will be wondering why you have starved glue joints, loose veneers and blisters.

On the other hand, if you are to glue softwoods exclusively see that your glue spreader has good sized corrugations, or if hardwoods only, get a spreader with small corrugations or with a smooth face, as in this kind of wood they will be found to give best results.

Considered from all angles there is no other method of glue application known that will spread glue so evenly, economically, and quickly as by means of the glue spreader. It is quite true that a glue spreader costs more than an ordinary glue brush, but remember that the glue spreader will prove a valuable asset in your glue room equipment by saving glue, time, trouble, and money.

Costs Can be Saved in the Cutting Room

(Continued from page 73)

and the wood patterns changed. Such a council of foremen and management will be very fruitful. There is so much latent inventive spirit in our foremen that a wise management will not overburden them with too much detail work, but will leave ample time for puttering around on possible improvements.

Whenever something really worth while is found whereby costs are reduced or the quality is improved, the management should not be niggardly but should pay for practical suggestions handsomely. Hard cash is still the best stimulant for an enterprising man .

Would Represent Canadian Woodenware Manufacturers

A London manufacturers' agent, who claims an established connection with the London wholesale and shipping trade, wishes to secure the representation of Canadian manufacturers of paper and strawboards of all kinds, and goods which are handled by wholesale hardware firms, such as wire nails, mouse traps, washing boards, clothes pegs, and all lines of domestic woodenware. Name and address of inquirer may be obtained from the editor of this publication.

London Trade Opposed to Alterations to Canadian Cheese Box

Trade Commissioner H. Watson of London, England, writes in regard to Canadian cheese boxes as follows:—

At one time complaints were constantly being made about the damaged condition in which Canadian cheese boxes reached importers in the United Kingdom, but resulting from the adoption of better methods, there has since been a marked improvement, and while cases of breakage occasionally happen, these have become much less frequent.

The question, however, crops up periodically, and the increased volume of business secured by New Zealand cheese in this country has caused a suggestion in certain quarters that a factor in this success is the superiority of the New Zealand crate over the Canadian box. This has led to an offer from the Forest Products Laboratories, acting in the interests of the Canadian cheese trade, to make a series of tests on the present Canadian box and also upon a new type of box which it has been suggested in Canada might advantageously replace it, but as a preliminary this office was requested to secure information as regards the harm being done to the Canadian cheese industry in England through the poor condition in which the cheese arrives, and whether there is any advantage in having the box in its present size and shape.

Our own experience was that the London trade is pretty well satisfied with the condition in which Canadian cheese boxes now arrive, and that whereas the crate is considered suitable for the New Zealand cheese, there has been no general demand that it should replace the Canadian box, while, further, any such alteration would be foreign to the well-known conservative traditions of all trades in this country.

In order, however, to thoroughly test the matter, it was decided to consult the secretary of the Home and Foreign Produce Exchange, Ltd., a body which includes in its membership practically all important wholesalers engaged in the butter, cheese and provision trades in all its branches, and as that official considered the subject of the highest importance, he kindly offered to ascertain the views of his members.

After a most exhaustive investigation, it has been found that the trade is totally opposed to any departure from the size and shape of the box which has so long been associated with the Canadian cheese trade, and for the information of makers and shippers, it is thought interesting to reproduce the letter received from the secretary to this effect as follows:—

"This matter has now been very carefully considered by all sections of the trade, and the unanimous opinion is that the present size and shape of the box is quite suitable and should therefore be continued, but it is particularly pointed out by the wholesale section that the boxes coming from the factories in the western provinces are better than those from other districts, especially those from the Quebec factories, which leave much to be desired. I am to add the recommendation that pulpwood should not be used under any circumstances for the manufacture of the cheese boxes.

"In the course of the inquiry attention was drawn to the large number of lids which become broken and detached in handling, and I am to ask if means cannot be found to more securely fasten the lids."

The Sidman Lumber Curing Process

IN

Either Wood, Brick or Concrete Building.

Fillers and glazes to preserve the building.

The TAG-ROESCH **Automatic** Time-Temperature and **Humidity Controller.**

Three-ply and Du-o-fold Army Duck Curtains, and Hussey Door Carrier Doors.

Automatic Heating, Ventilating and Humidity Systems for Varnish Rooms.

Reducing and Back Pressure Valves, Oil and Grease Extractors.

Sidmans AUTOMATIC **Suction System** for returning ALL Condensation DIRECT to the Boiler.

Cantilever Steam Traps and other Steam Specialties.

Active and Non-Down Draught Vent Heads for all purposes.

Cleanable Screen Panel and Window Ventilators.

Roller Bearing (Ott) **Channel Iron** Car Bunks and Transfer Cars.

Thermostats, Recording Gauges, and The Sidman Special Hygrometers.

For Description and prices, write

The

Sidmans of Canada

Heating and Ventilating Engineers and Lumber Curing Specialists

LONDON **ONTARIO**

"Well Bought is Half Sold"

Here are some more

Dry Hardwoods

to take place of those that "hopped off" our last list.

3	cars	4/4	No. 2	Com. & Btr.	Basswood.
2	"	5/4	"	"	"
2	"	6/4	No. 2	"	"
5	"	5/4	No. 2 & 3	Com.	Basswood. (About 50% each grade)
1	"	3"	No. 1	Com. & Btr.	Birch.
2	"	4/4	No. 2	"	" Soft Maple.
1	"	8/4	"	"	" Red Oak.
½	"	8/4	"	"	" White Oak.
1	"	8/4	No. 2 & 3	Com.	R. & W Oak.

Canadian General Lumber

Company Limited

FOREST PRODUCTS

TORONTO OFFICE:—712-20 Bank of Hamilton Building

Montreal Office:—514 Canada Cement Company Building

Mills: Byng Inlet, Ont.

Wants Quotations on Canadian Plywood

An importer in Holland will be glad to hear from Canadian manufacturers of plywood of birch, cedar or oak, from 3 to 5 plies, in sheets of 50 by 50 inches or 50 by 60 inches and 4, 6, 8, 10 and 12 m.m. in thickness. Samples and quotations should be submitted. Further information in possession of the editor of this publication. Refer to inquiry No. 1086.

Inquiry for Dowels and Chair Stock

A London firm are desirous of securing the representation of Canadian manufacturers of dowels, deck chair stock, doors and handles, seeking business in Great Britain. For further information apply to the editor referring to No. 1183.

The Lumber Market

Domestic Woods

Judging by the number of building permits that were taken out in the larger cities during January, there is every indication that 1923 is going to show continued activity this spring and summer. Conditions in the lumber arena are growing more active, the demand is developing on all sides, dry stocks are widely scattered and in fewer hands, and before the new cut is placed on the market, it looks as if there might be a decided shortage in certain grades, widths and thicknesses, with corresponding advances in price.

Just what state of affairs will prevail after June next when the new lumber comes on the scene, it is difficult to foretell. In the meantime, it is the easiest task possible to sell lumber of any kind if you have good, dry stock at a convenient shipping point. Inquiries are numerous and industrial concerns are eagerly scanning the sources of supply. There is a note of confidence and optimism throughout all ranks of the industry which would be immeasurably increased if the developments in Europe showed brighter signs of adjustment. One great danger facing the trade is that of a runaway market and it will require all the possible poise, balance and good judgment to guard against this undesirable turn of things.

In hardwoods, unusual activity and strength characterize the horizon, and in some quarters there is the menace of runaway quotations. Automobile concerns continue to buy heavily and to contract ahead for desirable supplies. The call for birch and maple in the better grades is keen and American inquiries are most insistent, prices not being questioned in numerous instances. All Canadian industrials, such as furniture factories, piano concerns, etc., are beginning to make inquiries about replenishing their stocks for the coming season. Flooring manufacturers are busy and continue to absorb large quantities of oak and maple. They look for a heavy demand for their product this spring. The car situation is considerably improved of late.

Although much was said at the Canadian Lumbermen's Association gathering last month against the danger and difficulty of a runaway market, and many utterances were hurled against such a situation, there is evidence of a steady,—yes even a rapid advance—and the danger of speculative values cannot be minimized. Those who have dry stocks are holding them at an exalted figure and are getting their prices, from domestic and American consumers. The outlook is stimulating, and stocks are scarce. Production this winter is being carried on in some centres actively but in others, it is reported, that the hardwood log harvest will not be as large as expected. The full development, so far as the production point is concerned, will not be known for a few weeks yet.

Imported Woods

Reports from the various lumber centres of the United States indicate that there is quite a phenomenal demand for this time of year. The whole hardwood situation seems to be much improved and the outlook on the coming spring trade is a most hopeful one. Strength is shown in almost all lines and while all items are moving freely the automobile and furniture factories are probably the heaviest buyers. Prices are inclined to move upwards while stocks are not accumulating. Taking the situation generally the present activity seems to have many of the elements of performance and a continuation of it is looked for through several months. More detailed reports of some of the important markets follows:

Evansville, Ind.—The hardwood lumber manufacturers and wholesalers in Evansville and other southern Indiana towns report that their business for January showed a big gain over the corresponding month of last year and that February has started in very well and in their opinion it also will show a gain over the corresponding month of last year. The demand for the best grades of hardwood lumber is strong and some of the grades are reported to be scarce and this will naturally cause an increase in pricea little later on. Production in some sections has increased, according to reports received here. Lumber prices are holding firm. Furniture factories have been buying a great deal of gum. This has caused a stiff demand for this lumber and the prices are holding rather firm. With furniture factories in some instances operating over-time and with many of the other wood working plants here being operated on steady time, lumber men say that the trade outlook is very good and they are well pleased at their prospects.

Louisville, Ky.—Demand for hardwoods is excellent, January business having been quite large, while February is coming up nicely. In fact, January business was normal, whereas in many years there is a bad slump about the first of the year. The veneer and panel people as well as the lumber houses report excellent business and fine prospects.

Demand is general for woodworking concerns, including the furniture, implement, wagon, car building, railroad, flooring, planer mill, and jobbing lines. Shipments have been good as a result of fairly open weather and better car supply than anticipated. Movement has been largely on red and white oak, walnut, poplar, red and sap gum, ash and elm, while some cottonwood, hickory, maple and chestunt have been reported sold.

Memphis, Tenn.—All members of the Memphis hardwood trade agree that demand is abnormally active for this time of the year and that the outlook is exceptionally favorable for continuance of this con-

Gum

Oak, Ash and other Southern Hardwoods

You experienced Buyers— do you realize this?

You know the value and economy of good lumber.

But do you realize that the greatest economy comes from adhering to one shipper whose quality has proven **uniformly** good?

Uniformity must exist in your materials if you realize economy.

That's why a great proportion of Kraetzer-Cured lumber goes to old customers. They **know** it's always uniform. They realize they can depend upon it. They have experienced the savings in working costs and enjoyed the enhancement of reputation through buying Kraetzer-Cured lumber exclusively.

Lumber— Kraetzer-Cured

means—

1. **Freedom from warp.**
2. **Maximum quality.**
3. **Lower moisture contents.**
4. **Less kiln drying Cost.**
5. **Uniformity.**
6. **Accurate grading.**
7. **Bright, unstained lumber.**
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Isn't this the kind of lumber you're looking for?

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Greenwood, Miss.

ON EVERY BOARD THE KRAETZER-CURED LUMBER CO. YOUR GUARANTEE OUR MUTUAL PROTECTION

Look for the Brand on Every Board

dition. Both domestic and foreign consumers are in the market in a substantial way and orders are being received in most satisfactory volume. Furniture and automoblie interests represent the most active groups but there is a very satisfactory demand from manufacturers of flooring, boxes, heavy packing crates, musical instruments and agricultural vehicles and implements. The railroads, too, are in the market in a large way for car stock, timbers, cross ties, switch ties and other materials. Demand for veneers is steadily increasing while built-up stock, including panels, is in good request.

Prices continue firm and are in many instances, especially on low-grade lumber, approximately double what they were a year ago.

News of the Trade

Hon. J. A. Robb, Minister of Trade & Commerce for Canada, visited the Indian Coast on his return from Australia and describes India as a great and growing market for Canadian wood products, including musical instruments.

The employees club of the Myers-Warren Lumber Co., Toronto, held their first annual banquet recently, which was a signal success. There were about seventy-five present and many interesting contributions to the proceedings were supplied by local talent.

The Davie Shipbuilding and Repairing Co. Ltd., Lauzon, Que., recently suffered a fire loss of $100,000 when their machine shop was destroyed.

Carriage Factories, Ltd., Montreal, recently suffered a heavy fire loss, their plant being entirely destroyed.

The plant of the Ottawa Wicker Work Co., Ottawa, was recently destroyed by fire.

Barrett Bros., general woodworkers, Ottawa, have completed their new sash and door factory and have installed a shavings exhaust system, supplied by the Toronto Blower Co.

Port Elgin Box Co. Ltd., Port Elgin, Ont., was recently incorporated to manufacture and deal in boxes, cases, crates and other similar containers. Capital $40,000.

Caron & Munier, general woodworkers, is a recent registration at Montreal.

The many friends of A. M. Kerr, secretary of the Preston Woodworking Machinery Co., Preston, Ont., will sympathize with him in the death of his wife. Besides her husband, she leaves a family of three small children.

The Elmira Furniture Co., Elmira, Ont., in association with the Orillia Furniture Co., Orillia, Ont., and the Chesley Chair Co., Chesley, Ont., have leased the entire third floor of the Fehrenbach-Weber block in Kitchener which will be the permanent showrooms of the three associated companies. The quarters on the third floor of the new block are ideal for the purpose, being central, well lighted and capacious.

The Gibbard Furniture Co., of Napanee, Ont., is rebuilding its factory. The new premises when completed will provide for increased output.

The wedding is announced of Carl H. Gruetzner to Miss Mable Pound, of Aylmer, Ont. The groom is a son of G. A. Gruetzner, manager of the Hespeler Furniture Co., Hespeler, Ont.

W. L. Fish & Son, Megantic, Que., box manufacturers, is a recent registration.

Canfield-Wilmot, Ltd., Woodstock, Ont., is a new firm with a $100,000 capital recently incorporated to manufacture all kinds of wood products. P. L. Canfield and A. G. Wilmot are two of the incorporators.

L. R. Kearney, Challis House, Sydney, Australia, importer and exporter, wishes to be placed in touch with Canadian exporters of wood veneers, manufactured fir doors and lumber for furniture manufacture.

The Elm Woodwork Shop is a partnership recently registered at Winnipeg.

It is said that a number of private citizens of Haileybury are investigating the advisability of erecting a planing mill by public subscription. It is pointed out there is a big demand for such an enterprise in the district, in connection with the extensive rebuilding operations which will be carried on in the way of erection of stores and houses, and the prospects for business are reported very good. The probable location of the new industry will be on the site formerly occupied by the pulpwood rossing plant of the Riordan Company, which was destroyed by fire in October last.

Canadian Graphophone & Piano Company, Ltd., Montreal, is a new concern with provincial charter to manufacture and market pianos, phonographs and other musical instruments.

John Hoodless, Hamilton, Ont., prominent citizen and retired furniture manufacturer, died recently at the age of 69 years. Deceased was at one time a principal in the firm J. Hoodless & Sons, Hamilton, furntiure makers.

The sash factory of J. B. Harper, Delorimier St., Hull, Que., was totally destroyed by fire recently, entailing a loss of $10,000.

John Stevely, of the Columbia Handle Co. Ltd., London, Ont., passed away recently in his 60th year. Deceased was a well known business man of that city and a brother of ex-Mayor Samuel Stevely of London.

The planing mill of A. Root, Smith's Falls, Ont., was burned recently.

The Consolidated Stamping & Toy Mfg. Co., Amherstburg, Ont., are anticipating alterations to their factory.

McAuliffe Davis Co., Duke St., Ottawa, recently suffered a loss of $3,000 when their office was burned.

A $70,000 action against Dominion Manufacturers, Limited, was launched before Mr. Justice Kelly in the Civil Assize Court recently by Mr. A. J. H. Eckhardt, formerly head of the National Casket Company, of Toronto. The plaintiff alleges that, when in 1913 he relinquished his interest in the National Casket Company, National Silver Plate Company and Dry Kiln Woodworking Company to the defendants, assets to the amount of $70,975 were omitted from the valuation without his knowledge. The transaction was executed through J. R. Johnson, financial broker, on terms that all liabilities be assumed and a certain number of shares be given Eckhardt, who states he subsequently discovered the mistake in the valuation. The defendants deny wrongful valuation.

The Peter Hay Knife Co., Ltd.

Manufacture the Best

PLANER KNIVES and CUTTERS

OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited

GALT, ONTARIO

QUALITY SERVICE

Prosperity is Coming Fast.

Are you in a position to meet it?

We Can Help You

on the way to do so, if you will use the right kind of Canadian Hardwoods.

The Kind We Sell.

The
Kinnon Lumber Co.
LIMITED
454 King St. W. Toronto

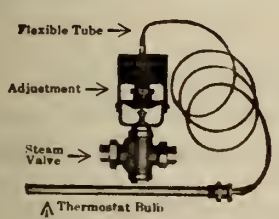
Announcing—

We wish to announce that we are now the Agents for this district for the **Elliott Machinery Company, Limited,** manufacturers of the famous Elliott Woodworker, Jig Saws, Shapers, Floor Sanders, Pony Planers, Band Saws, etc. We would be glad to furnish information and prices on request, and invite inspection of machinery at our warehouse.

Immediate shipments made from our stock.

A full line of used woodworking and metal working machinery is also carried.

GENERAL MACHINERY CO.
67-69 Frederick St., TORONTO
TELEPHONE MAIN 2200W



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Entirely self-contained, requiring no air or water pressure for operation.

Prevents checking and case hardening in the kiln. Invaluable in the varnish drying room.

Other types for other places.

Calgary Alta.
Halifax, N. S.
Montreal, Que.
Vancouver, B.C.
Winnipeg, Man.

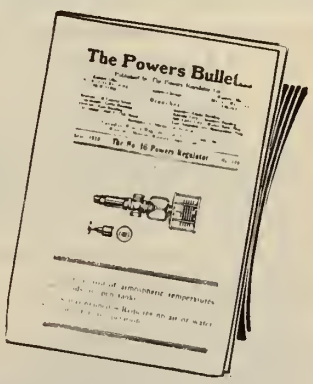
Please consult your telephone directory for local address.

"Let Us Reason Together"

You know that it cost you money every time your dry kiln gets too hot—or the temperature rises too rapidly.

But—do you know that Powers Automatic Heat Regulators offer a sure means for saving you that money? They do, and we want to prove it to you in your own plant, under your own working conditions. It will save you much lumber if you will accept this offer.

The Canadian
POWERS REGULATOR CO. Ltd.
Specialists in Automatic Heat Control
106 Lombard Street — Toronto, Ont.



Powers Bulletins give concise, accurate information about automatic temperature control, etc., for glue pots, dry kilns, drying rooms, hot water tanks—and many other places where expense can be saved.
For more than thirty years we have been solving heat regulation problems with automatic control. Our experience is at your service.

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Equipment Materials Employment

For Sale

One 52" x 66" Merritt Veneer Lathe.
One 66" Automatic Merritt Veneer Clipper.
All in good condition. Reason for selling too short for their business.
GUELPH PATENT CASK CO. LTD.,
12 T.f. Scotstown, Que.

For Sale

2 Mitts & Menill Factory Hogs.
1 Bandsaw Resaw Grinder.
Shingle Mill Machinery.
Wooden Pail & Tub Machinery.
THE C. BECK MFG. CO. LIMITED,
12-3 Penetanguishene, Ont.

Mahogany Real Sacrifice

10 M. ft. Mahogany, 1" x 7" to 14". Lengths 8' to 20'. Nicely figured stock while it lasts. Job price 17 cents a foot, board measure. Terms cash. D. A. Swan, 372 Ontario Street, Toronto, Telephone Adel. 5186 W. 2

For Sale

Having installed a large Scraper, we are offering our 30" Whitney Scraper complete with knife grinder and two blocks, in first class condition. Apply Hay & Co., Ltd., Woodstock, Ont. 2-3

Wanted

Reliable and experienced office man, capable of selling finished lumber and mill work, and taking quantities off plans accurately. State salary expected. Hill-Clark-Frances Limited, New Liskeard, Ontario. 2

Wanted

1 split friction clutch 3 7/16" shaft with pulley sleeve.
1 Dowel machine.
6 Factory trucks.
3 Cabinet benches.
Apply McCall & Company, St. Williams, Ont. 2

For Sale or Rent

One two and a half storey stone building 100 ft. x 50 ft. with water power, also stone office building and two frame storage sheds. An ideal plant for woodworking or machine shop. Purchaser can arrange very easy terms. Apply to H. J. Hambleton, P.O. Box 1195, Smiths Falls, Ont. 2

Wanted

Experienced Woodworking Machinist or Millwright capable of taking charge of special work in various parts of the Province, with headquarters in or near Ottawa. Broad, practical experience of manufacturing processes essential. Applicant must have, or be capable of acquiring, sales personality, although this is not a selling proposition. Knowledge of French desirable but not absolutely necessary. Application by junior officers or men with overseas experience and above qualifications will receive first consideration. Address communications to Box 148, Canadian Woodworker, Toronto, stating age, experience, references and salary required. 2

GOOD VALUES

Subject to Prior Sale

Band Resaw, Connell & Dengler, 54 and 60 inch.
Band Rip Saw, Yates No. 281.
Circular Saw Mill, Hoosier Pony.
Circular Resaw, 30" and 44".
Dowel Machine, Clement.
Dowel Gluer and Driver, E. B. Hayes.
Jointer, Falls Machine Co., under cut 24".
Jointers, 12", 16", 24".
Jointer, Diehl, Continuous Feed.
Lathe, Back Knife, Clement 40".
Matcher, American No. 229 hardwood.
Matcher, Berlin No. 94, 15" x 6".
Moulder, Woods 10 and 12" inside.
Moulder, American 7" and 10" 4 side.
Planers, all sizes, single and double.
Sander, endless bed, 48" H. B. Smith.
Sander, Moore Machine Co. belt.
Sanders, Berlin 36", 42", 48" and 60".
Sander, Clement Belt roller table.
Saws, Berlin Double Cross Cut.
Woodworking Machinery Co., of Buffalo,
54 Mechanic St.,
Buffalo, N. Y.
10 T.f.

The January Furniture Expositions

The most successful furniture expositions ever held at Chicago and Grand Rapids were those which began on January 2 and closed last week. The attendance at both expositions broke all records and the buying was reported heavily active throughout. One of the leading furniture men stated that it was the first exposition he ever attended where the visiting buyers made no complaints as to trade conditions and this optimism was reflected at both of the two great furniture markets.

The total attendance at the January market at Grand Rapids was 2,777, as compared with 2,122 in January, last year, and 1,688 in January, 1921. The total attendance of buyers at the Chicago exposition was estimated at between 4,800 and 4,900. The exact attendance up to January 20 was 4,490 and during the following week it was believed it would reach the higher figure named. This is also the largest attendance of buyers at any market ever held in Chicago or elsewhere.

Furniture manufacturers are planning extensively for the future. In every furniture center building movements are on foot for additional exposition space. One or two new buildings are to be added at Grand Rapids this year and in Chicago the American Furniture Mart, by which is meant a vast furniture building, is to be erected on the Lake Shore Drive, and will undoubtedly put Chicago much further in the lead than it has ever been before as a furniture market. The new building will have a capacity of 1,250,000 square feet of floor space and already 816,000 square feet had been leased at the time of the laying of the corner stone on January 5. The ceremony was made a semi-public occasion and was attended by a large number of furniture manufacturers and other citizens. It was wound up with a banquet at the Drake Hotel in the evening.

It was noted at the various January expositions that the walnut idea prevailed in all living room furniture and that heavy sales were made in the modern designs of both walnut and mahogany. It was estimated that where certain lines were shown in these two woods 75 per cent of the total volume of sales was of walnut. There was very little oak furniture on the market and the birch and gum furniture, which was in the cheaper lines, was produced in imitation mahogany and walnut. There were some exhibits of birdseye maple with walnut finish, which was an innovation that received considerable approval. A new departure was also noted in mahogany, which was given a bright red stain in order to get away from the darker finishes that have heretofore prevailed. —The Lumber and Veneer Consumer.

The Manufacture of Phonographs

As might have been expected, a considerable decrease in the manufacture of phonographs and other talking machines in the U.S. was shown in 1921 as compared with 1919, when the last previous survey of the industry was made. The value of products, including all accessories, in 1921 was $98,164,000, as compared with $158,000, a decrease of 38.1 per cent from 1919. The number of these machines made in 1919 was 2,227,000 and in 1921 only 596,000. The number of disc records, however, shows an increase of over 2,000,000, the figures being 101,085,000 in 1919 and 103,436,000 in 1921.

Safeguard Your Investment

Protect Your Factory Against Loss by Fire

Gyproc Fireproof Wall Board is easily handled, and inexpensive for it can be sawn and nailed, the same as ordinary board. We will gladly send descriptive literature on request.

Your factory represents an investment of many thousands of dollars and probably years of your life. Is it properly protected against the ever-present danger of fire? If fire does break out, can it be confined before it spreads through the entire plant? The inflammable nature of your stock makes your risk doubly dangerous.

Don't take a chance. Your factory can be made permanently fireproof at small expense by the use of

GYPROC WALLBOARD

This method is approved by Fire Underwriters and Fire Chiefs and is the most practical method of fireproofing a building. Walls thus treated are permanent and afford perfect insulation against heat and cold. It is equally economical in the construction of new buildings and the fireproofing of old. Gyproc has already saved several furniture factories from destruction. It will do the same for yours. Why build to burn? A card will bring full particulars.

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Head Office - Paris, Ont.

—Branches—

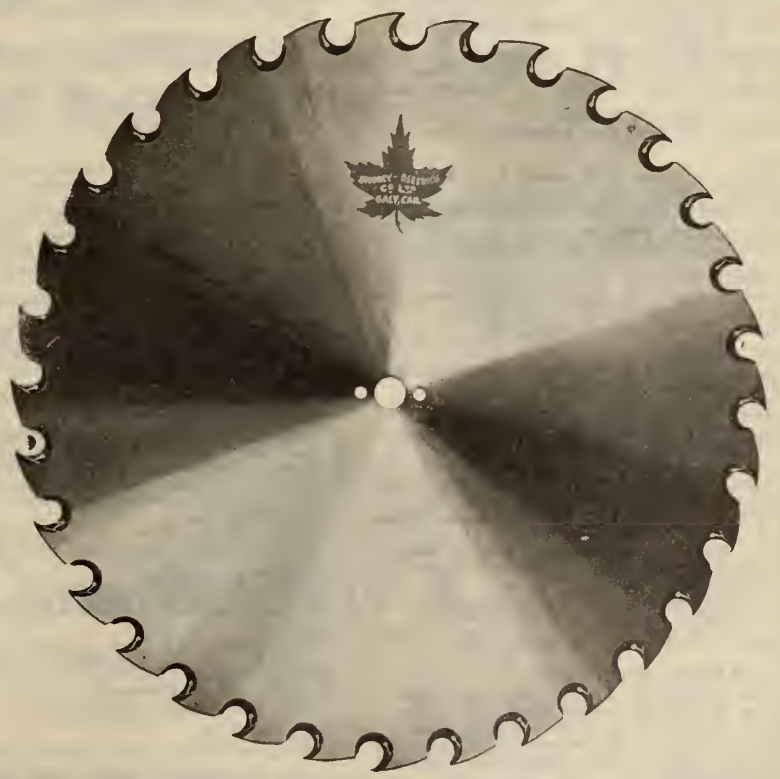
374 Beaver Hall Sq., Montreal 106 Don Esplanade, Toronto

Mills at Caledonia, Ont. and Lythmore, Ont.

MAPLE LEAF SAWS

There is a Maple Leaf Saw for every type of work – one that will reduce your cutting costs.

Maple Leaf Saws are made of extra refined Razor Steel tempered by our secret process.



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Canada Machinery Corporation, Galt, Ont.
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Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
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Cowan & Company, Galt, Ont.
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Edward Clark & Sons, Toronto, Ont.
Maus Lumber Co., Chas. O. South Bend, Ind.

BOILER FEED PUMPS
Smart-Turner Machine Co., Hamilton, Ont.

BLOWERS
Canadian Blower & Forge Co. Kitchener, Ont.
Sturtevant B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

BLOW PIPING
Canadian Blower & Forge Co. Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

BORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
McKnight & Sons Co., L. G., Gardner, Mass.
Nash, J. M. Milwaukee, Wis.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company Preston, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

BOX BANDS
Laidlaw Bale-Tie Co., Hamilton, Ont.

BOX MAKERS' MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

CABINET PLANERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CARVINGS
Klise Mfg. Co., Grand Rapids, Mich.
Decorators Supply Co., Chicago.
Walter, John & Sons Limited, Kitchener, Ont.

CARVING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

CARVING MACHINE BITS
Independent Tool Works, St Paul, Minn.

CARVED WOOD MOULDINGS
Klise Mfg. Co., Grand Rapids, Mich.

CASTERS
National Hardware Co., Orillia, Ont.

CENTRIFUGAL PUMPS
Smart-Turner Machine Co., Hamilton, Ont.

CHAIR MACHINERY
McKnight & Sons Co., L. G., Gardner, Mass.

CIRCULAR SAWS
Atkins & Co., E. C. Indianapolis, Ind.
Shurly-Dietrich, Galt, Ont.

CLAMPS
Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Black Bros. Co., Mendola, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Sons Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company,
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

CLAMP CARRIERS
Black Bros. Co., Mendota, Ill.
Taylor Mfg. Co., Poughkeepsie, N.Y.

COATED ABRASIVES
Herman Behr & Co., Inc., Brooklyn, N.Y.

COTTONWOOD PANELS
Rathbone, Geo. Ltd., Toronto, Ont.

CRATE MACHINERY
St. Joseph Iron Works, St. Joseph, Mich.

CROSS-CUT, MITRE AND RIP SAWING MACHINE
Mackenzie Machinery Co., D. Guelph, Ont.

CUT OFF SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Co., of Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Shimer Cutter Head Co., Galt, Ont..
Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.
Oliver Machinery Co., Grand Rapids, Mich.

DOORS
Pannill Door Co. Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

DOORS (Flush Veneered)
Hay & Co. Ltd., Woodstock, Ont.

DOORS (Fir)
Rathbone, Geo. Ltd., Toronto, Ont.

DOOR CARRIERS FOR DRY KILNS
Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Wylie & Co., Matthew Glasgow, Scotland

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company,
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Co., Preston, Ont.

DOWELS
Canada Wood Specialty Co. Ltd., Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont.
Cutler Desk Co., Buffalo, N. Y.
Grand Rapids Veneer Works, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sidmans, London, Ont.
Standard Dry Kiln Co., Indianapolis, Ind.
Sturtevant, B. F. & Co., Galt, Ont.

DUST COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.

EDGERS (Single Saw)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

EDGER SAWS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

ELECTRIC MOTORS
Sturtevant, B. F. & Co., Galt, Ont.

ENAMELS
Cosmos Chemical Co., Port Hope, Ont.

END MATCHING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

EXHAUST HEADS
Sturtevant, B. F. & Co., Galt, Ont.

EXHAUST SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

FEED ROLLS
Atkins & Co., E. C. Hamilton, Ont.

FIBRE PRODUCTS
Carter, E. T. Toronto, Ont.
National Patent Reed Sales Co., Philadelphia, Pa.
Walter, John & Sons Limited, Kitchener, Ont

FIR DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

FLOORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FRUIT PACKAGE MACHINERY
St. Joseph Iron Works, St. Joseph, Mich.

MAKE MORE MONEY

from your timber by working it into handles and other turned work. Short and crooked logs, small trees, and other waste material can be worked at a profit.

OBER machines will help you.
We build Turning Lathes, Sanders, Rip Saws, Bolters, Boring and Chucking machines, etc.

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The Ober Mfg. Co.

Chagrin Falls, O., U.S.A.

BOX NAILS and WIRE for Every Use

We manufacture a complete line of nails and wire in every style and size. Your special needs can be supplied. Write us today. We manufacture special styles to order.

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Harry F. Moulden & Sons, Winnipeg, Man.
Mr. Norman Jessiman, 505 Hastings St. W., Vancouver, B.C.
Head Office and Works: **HAMILTON, CANADA**

The Door Carrier System

Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.
Ask for catalogue.

DRY KILN DOOR CARRIER CO.
1117 Cornell Ave.
INDIANAPOLIS, IND.

Cross Sectional View of Planer Knife
Shaded portion indicates the High Speed Steel Edge "welded" to the face of the knife.

Users of Ordinary Thick Knives Can Now, by the Simonds New Method of "Welding" Obtain the Same Cutting Efficiency that Users of Thin High Speed Steel Knives Secure

It has been an accepted theory that high speed steel knives could not be welded. Yet here it is by the new Simonds process welded to a soft metal backing. This allows us to heat treat the knives to bring out the utmost in cutting efficiency. Old style high speed steel knives cannot be heat treated because the braze will come apart like any other soldered article. Welded knives do not come apart. They give longer service and last longer. We can now furnish these "welded" high speed steel knives for Spoke, Moulding, Lathe, Chair, Jointer and Planer Knives up to 30 inches long. We know of no other knife manufacturer that can supply these welded knives. The price is the same as for the ordinary brazed high speed steel knife. Book your orders now.

Simonds Canada Saw Co., Ltd.

Montreal, Que.

St. John, N.B. - **Vancouver, B.C.**

"Canadian Woodworker" Buyers' Directory—Continued

FURNITURE LEATHER
Eagle-Ottawa Leather Co., Grand Haven, Mich.

FIRE INSURANCE
Canadian Appraisal Co. Ltd., Montreal, Que.
Dominion Appraisal Co., Toronto, Ont.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N. Y.
Herman Behr & Co., Inc., Brooklyn, N.Y.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GLUE
Canada Glue Co., Brantford, Ont.
Cannon Canadian Co., Toronto, Ont.
Coignet Chemical Products Co., New York, N.Y.
Kane Manufacturing Co., Chicago, Ill.
Monite Waterproof Glue Co., Minneapolis, Minn.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

GLUE HEATERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.

GLUE JOINTERS
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Simonds Canada Saw Co., Montreal, P.Q.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GROOVERS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Mattison Machine Works, Rochford, Ill.

GUM LUMBER
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Hyde Lumber Company, South Bend, Ind.
Mercean-Hawkins Tie Co., Huntington, W. Va.

HAIR (Curled)
Blocksom & Co., Michigan City, Ind.

HAND SCREWS
Fay & Egan Co., J. A. Cincinnati. Ohio.

HANDLE & SPOKE MACHINERY
Fay & Egan Co., J. A. Cincinnati. Ohio.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Nash, J. M., Milwaukee, Wis.

HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.
National Hardware Co., Orillia, Ont.
Larsen & Shaw Ltd., Walkerton, Ont.

HARDWOOD LUMBER
Anderson, Shreiner & Mawson, Toronto, Ont.
Atlantic Lumber Company, Toronto, Ont.
Banning, Leland G., Cincinnati, Ohio.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Clark, Edward & Sons, Toronto, Ont.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Canadian General Lumber Co., Toronto, Ont.
Dudley Lumber Co. Inc., Memphis, Tenn.
Farrin Lumber Co., M. B., Cincinnati, Ohio
Gulf Lumber & Trading Co., New Orleans, La.
Hall Bros. Ltd., Toronto, Ont.
Hyde Lumber Co., South Bend, Ind.
Johnston Lumber Co., Toronto, Ont.
Kinnon Lumber Co. Ltd., Toronto, Ont.
Kneeland-Bigelow Co., Bay City, Mich.
Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Luehrman Hardwood Lbr. Co., St. Louis, Mo.
Maus, Lumher Co., Chas. O. South Bend, Ind.
May Hardwood Co., R. R. Louisville, Ky.
Mercereau-Hawkins Tie Co., Huntington, W. Va
Mowbray & Robinson, Cincinnati, Ohio.
Otis Mfg. Co., New Orleans, La.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Walnut Co., St. Louis, Mo.
Ritter Lumber Co., W. M. Columbus, Ohio.
Stack Lumber Co., Escanaba, Mich.
Stark & Co., Jas. E., Memphis, Tenn.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Stimson & Co., J. V., Owensboro, Ky.
Sullivan, Frank T. Buffalo, N. Y.
Wood Mosaic Co., Louisville, Ky.
Willey Co., C. L. Chicago, Ill.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HARDWOOD LUMBER (Kiln Dried)
Rathbone, Geo. Ltd., Toronto, Ont.

HEATING SYSTEMS
Toronto Blower Co., Toronto, Ont.

JOINTERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shimer Cutter Head Co., of Can. Ltd., Galt.
Simonds Canada Saw Co., Montreal, P.Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNOBS
Waddell Mfg Co., Grand Rapids, Mich.

LACQUERS
Cosmos Chemical Co., Port Hope, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sanducky, Ohio.
Mattison Machine Works, Rochford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.

LEGS
Klise Manufacturing Co., Grand Rapids, Mich.

LUMBER DRY KILNS
Sturtevant, B. F. & Co., Galt, Ont.

MACHINE KNIVES
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Peter Hay Knife Company, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

MITRE SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
McKenzie Machinery Co. D. Guelph, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS
Sturtevant, B. F. & Co., Galt, Ont.

MOTORS
Sturtevant, B. F. & Co., Galt, Ont.

MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, J. Kitchener, Ont.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati. Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

OAK FLOORING
Rathbone, Geo. Ltd., Toronto, Ont.

OIL STONE GRINDERS
Oliver Machinery Co., Grand Rapids, Mich.

PAINT
Marietta Paint & Color Co., Marietta, Ohio.

PANELS
Calhoun Plywood Co., Sheboyan, Wis.
Hardwood Products Co., Neenah, Wis.
Hay & Co., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont

PATTERNS PINE
Rathbone, Geo. Ltd., Toronto, Ont

JAMESTOWN, N. Y.

Carborundum Brand Garnet Products in the Woodworking Centers of America

OVER a hundred years ago—shortly after the War of 1812, to be exact—when the watch fires of the Iroquois were still signaling from the Chautauqua Hills—pioneer craftsmen began making furniture where now stands the City of Jamestown, N. Y.

Today Jamestown ranks among the leading furniture centers of America—a thriving, energetic city of 40,000—a city rich in the history of progress and achievement.

Today Jamestown has over sixty furniture plants, the products of which stand high in the estimation of those who sell and buy good furniture.

And in practically all of these plants you will find Carborundum Brand Garnet Paper and Cloth on the sanding machines and in the hand-finishing rooms, giving to Jamestown furniture a finish in keeping with Jamestown Quality—helping to keep up production and making possible lowered sanding costs.

It's all in the North River Garnet Grain—the high quality of backings and glue—and in the superior process of making

CARBORUNDUM BRAND GARNET PRODUCTS MAKE GOOD SANDERS BETTER SANDERS

The Carborundum Company, Niagara Falls, N. Y., U. S. A.

New York, Chicago, Boston, Philadelphia, Detroit, Cleveland, Cincinnati, Pittsburgh, Milwaukee, Grand Rapids

"Canadian Woodworker" Buyers' Directory—Continued

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corporation, New London, Wis.
Calhoun Plywood Co., Sheboygan, Wis.
Guelph Patent Cask Co., Scotstown, P. Q.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

REED
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

REVERSIBLE PLANING MILL FANS
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FOLLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
McKenzie Machinery Co., D., Guelph, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

SANDPAPER
Behr & Co.. Herman, Brooklyn, N. Y.

SASH DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW SHARPENERS
Oliver Machinery Co., Grand Rapids, Mich.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKenzie Machinery Co., D., Guelph, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

SPRUCE DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM & OIL SEPARATORS AND REFINERS
Smart-Turner Machine Co., Hamilton, Ont.

STEEL PLATE PLANING MILL EXHAUST
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

STEEL PRESSURE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Walter & Company, B., Wabash, Ind.
Watertown Table Slide Co., Watertown, Wis.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Calhoun Plywood Co., Sheboygan, Wis.
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

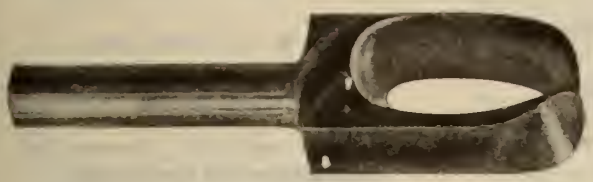
TRUCKS
National Dry Kiln Co., Indianapolis, Ind.
Oliver Machinery Co., Grand Rapids, Mich.

TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

Carving Machine Bits

POD BITS—All sizes from 5/64 to ½-inch
SQUARE END BITS—All sizes from 5/64 to ½-inch.



DOUBLE CUTTER BITS—All sizes from ⅜-inch, up.

ROUTER BITS—All sizes from ⅛-inch, up.

Made of the best material obtainable by men who have had years of experience in making this class of tools.

All styles of bits for multiple carving machines and routing machines.

Shanks made to fit the machine you have; suitable for Victory, Lochman, Moore or Seaman Carvers.

Send for Catalogue "BC"

Independent Tool Works

Como and Marion **St. Paul, Minn.**

THIS IS THE NAME

of the Machinery for the Rapid Production of

Veneer—Crates—Baskets—Fruit Packages.

"ST JOE"

Get the name fixed in your mind.

ST. JOSEPH IRON WORKS, St. Joseph, Michigan

"Canadian Woodworker" Buyers' Directory—Continued

TURNED WOOD GOODS
Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TWIST WORK
Klise Manufacturing Co., Grand Rapids, Mich.

UPHOLSTERY
Oriental Textiles Co., Oshawa, Ont.

UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Sturtevant, B. F. & Co., Galt, Ont.

VACUUM PUMPS
Smart-Turner Machine Co., Hamilton, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Guelph Patent Cask Co., Scotstown, P. Q.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Standard Veneer Co., Portland, Me.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER CLIPPERS
St. Joseph Iron Works, St. Joseph, Mich.

VENEER SAWS
Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.
St. Joseph Iron Works, St. Joseph, Mich.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

VENEER LATHES
St. Joseph Iron Works, St. Joseph, Mich.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

WALLBOARD
Ontario Gypsum Co., Paris, Ont.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Sawmill Co., Des Moines, Iowa.
Maus Lumber Co., Chas. O. South Bend, Ind.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Walnut Company, St. Louis.
Sullivan, Frank T., Buffalo, N. Y.

WASTE
Carter, E. T., Toronto, Ont.

WINDOW FRAME MACHINE
Atlas Mfg. Co., Orlando, Florida.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Pettingell Machine Co., Amesbury, Mass.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

Speed + Perfect Joints = Low Costs

The Taylor TRADE MARK

CLAMP CARRIER
for
Small Jobs in the Big Plant
All Jobs in the Little Plant

1. Natural standing position of operator.
2. No Juggling of heavy clamps.
3. No bending or walking.
4. No pile to overturn to get work glued first—simply move clamp one section.
5. Less space than equal number of clamps with work in, piled on the floor.

Any size to suit your work. 8 and 12-section wheel type. 16, 20, 30 and 40-section chain type. 4, 5 or 6 clamps per section for stock up to 42-in. wide.

Representatives:
A. R. Williams Machinery Co., Toronto, Canada

James L. Taylor Mfg. Company
Poughkeepsie, N.Y., U.S.A.

Panels in Stock

Lamatco, 3 Ply Cottonwood

198 pcs. 1/8 x 24 x 60
150 " 1/8 x 32 x 60
200 " 1/8 x 42 x 60
132 " 1/8 x 24 x 66
75 " 1/8 x 42 x 66
Clear $65.00, Selects $50.00.

69 pcs. 3 16 x 24 x 60
85 " 3 16 x 32 x 60
136 " 3 16 x 42 x 60
161 " 3 16 x 24 x 66
187 " 3 16 x 32 x 66
68 " 3 16 x 42 x 66
Clear $85.00, Selects $65.00

72 pcs. 1/4 x 32 x 60
264 " 1/4 x 42 x 60
240 " 1/4 x 32 x 66
48 " 1/4 x 42 x 66
Clear $100.00, Selects $75.00
Graded one face only.

Fir Panels 3/8" Good 2 sides
38 pc. 30 x 60
95 " 24 x 72 .16c.
84 " 30 x 72

Fir Panels 3/8" Good 1 side.
33 pc. 24 x 60
35 " 30 x 60 .14c.
5 " 24 x 72
21 " 30 x 72

Birch 3/8" Good 2 sides
39 pc. 30 x 72
11 " 30 x 60 .25c.
2 " 24 x 60

Plain Oak 3/8" Good 2 sides
38 pc. 30 x 72
52 " 30 x 60 .30c.
20 " 24 x 60

Chestnut 3/8" Good 2 sides
29 pc. 30 x 72
22 " 30 x 60 .30c.
35 " 24 x 72
41 " 24 x 60

1/4 Cut. W. Oak, 3/8" Good 2 sides
23 pc. 30 x 72
34 " 24 x 72 .35c.
11 " 24 x 60

Kiln-dried Hardwoods our specialty

Established 1881

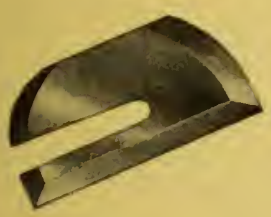
1 3/8-3 panel Clear Fir Doors

25 2 - 0 x 6 - 6
25 2 - 2 x 6 - 6
50 2 - 4 x 6 - 6
150 2 - 6 x 6 - 6
25 2 - 0 x 6 - 8
25 2 - 2 x 6 - 8
50 2 - 4 x 6 - 8
150 2 - 6 x 6 - 8
150 2 - 8 x 6 - 8
$5.25 each

1 3/8-2 panel Clear Fir Doors

25 2 - 0 x 6 - 6
25 2 - 2 x 6 - 6
50 2 - 4 x 6 - 6
150 2 - 6 x 6 - 6
25 2 - 0 x 6 - 8
25 2 - 2 x 6 - 8
50 2 - 4 x 6 - 8
150 2 - 6 x 6 - 8
150 2 - 8 x 6 - 8
$5.25 each

GEORGE RATHBONE LIMITED, Northcote Ave., Toronto



ATKINS

STERLING QUALITY

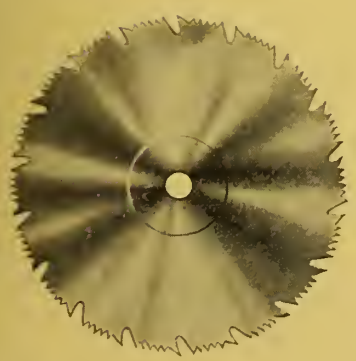
SAWS and KNIVES

ECONOMIZE

ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing

Atkins Sterling Quality Saws

and Machine Knives



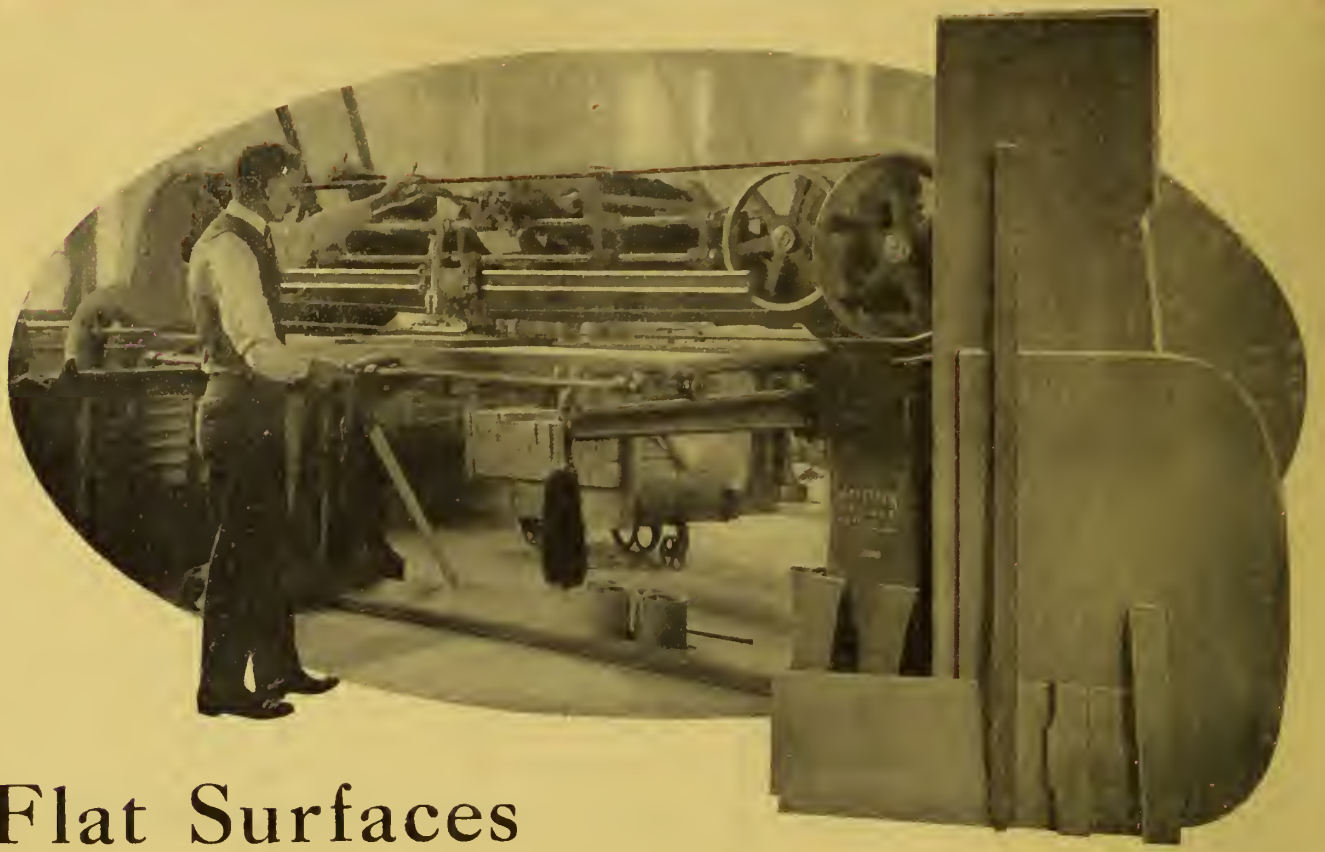
Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.

Write to-day for our Knife Booklet "C.W." and Pattern Template Paper.

E.C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**



Flat Surfaces Perfectly Sanded at half the Cost

THIS new Mattison Automatic Power Stroke Sander, equipped with the means for spot sanding by hand, is the only efficient method for finish-sanding flat surfaces. It is the only method that will give you speed and accuracy. It is the only method which provides a uniform contact; and that is absolutely essential for perfect work.

On the Mattison, with the shoe under the fast power stroke and a uniform pressure on operating lever, operator goes over the entire surface. A quick shift to hand control touches up any low spots. Switching back to power stroke, a clean sweep over the panel gives it the long-sought-for perfect finish, smooth and uniform.

By increasing capacity, eliminating spoilage, and producing a perfect finish, the Mattison Stroke Sander will cut the cost of your flat sanding in half.

Satisfied Users

Ottawa Furn. Co.—" We find that we can get very much more work done with this machine than was possible with any of the former stroke sanders that we have had in our plant. The work, too, is as nearly perfect as can be had."

Hayworth Roll and Panel Co.—"We are well pleased with our No. 124 Stroke Sander and think it is the most human-like machine we have ever seen."

Grand Rapids Chair Co.—"We are operating two of these machines among all other makes, and they are in a class by themselves for good work and production."

Elite Furn. Co.—"In the words of our superintendent, "It is perfect."

MATTISON
MACHINE WORKS
Rockford, Illinois, U. S. A.

Volume-Twenty Three TORONTO, MARCH, 1923 Number Three

CANADIAN WOODWORKER and Furniture Manufacturer

MANUAL TRAINING MACHINES

The subject of manual training is now engaging the attention of not only our educationalists but also of the general public. Manufacturers in particular are keenly interested, we would therefore remind everyone directly or indirectly interested that we manufacture the most complete and up-to-date assortment of manual training or technical school machines for wood or iron working made in Canada.

Any communication asking for information on this interesting subject sent to us will receive our most careful and courteous attention.

36″ Band Saw, with motor drive, guards, and ball bearings

We Manufacture

Manual Training Lathes.
Band Saws, Ball Bearing.
Buzz Planers or Jointers.
Variety Saws.
Double rip and Cross cut Saws
Ball Bearing Shapers.
Surface Planers.
Machine Tools, etc.

CANADA MACHINERY CORPORATION LIMITED

GALT - ONTARIO

Toronto Sales Office:
721 Bank of Hamilton Building

C.M.C.

Registered trademark

Alphabetical Index to Advertisers, Page 12

MANUFACTURERS OF

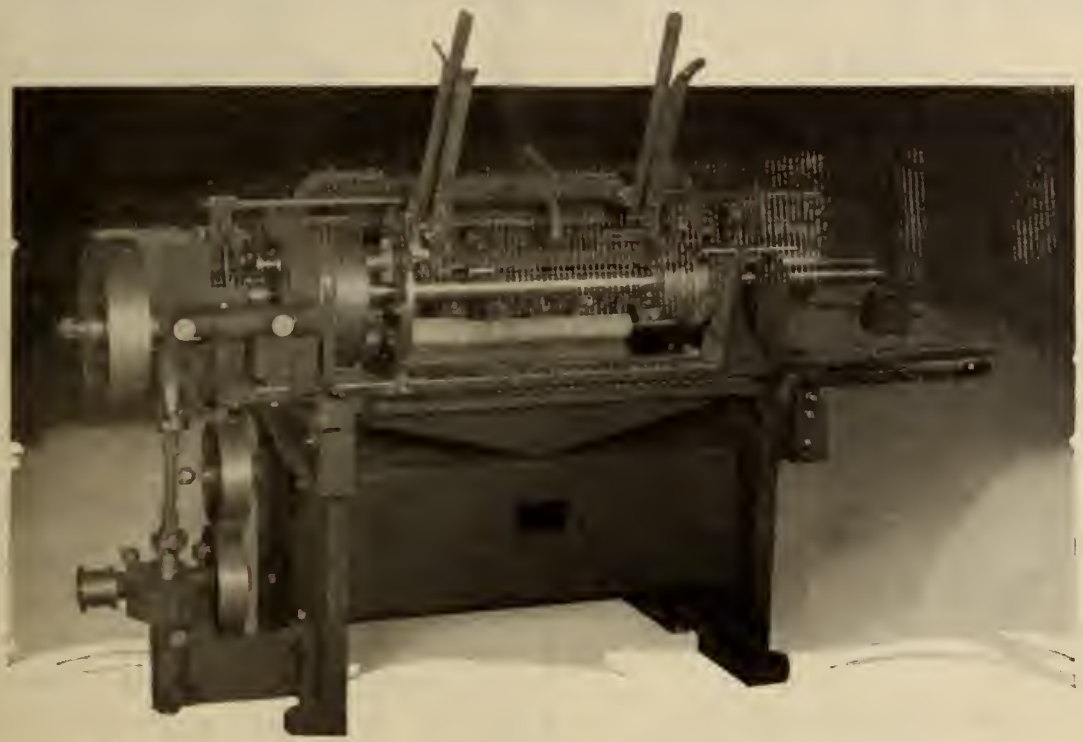
MAPLE LEAF BRAND

Ethyl Alcohol—Cologne Spirits—Absolute Alcohol, B.P.
Methylated Spirits and Denatured Alcohol (all formulae)

Distributing Warehouses:—

MONTREAL TORONTO WINNIPEG VANCOUVER

SKF



Ball Bearings on Wood-Turning Lathes Maintain Precision at High Speeds

THE high speeds and accuracy demanded of wood-turning lathes make the use of **SKF** marked self-aligning ball bearings on all rotating parts an essential requirement for the maintenance of continuous high quality production.

This type of bearing offers a simple, compact mounting with ample space for lubricant, which cannot escape because the housing is oil-tight. Pinching and binding cannot occur as the self-aligning ball bearing possesses exclusively the inherent ability of adjusting its plane of rotation to compensate for misalignment and deflection.

Even after years of service, the spindles are as free from vibration as when new, for this type of bearing, properly installed, develops no discernible radial or lateral play.

As a result self-aligning ball bearings are extensively used not only on wood-turning lathes but on other woodworking machinery as well.

CANADIAN **SKF** COMPANY, LIMITED TORONTO MONTREAL

Normal View

Deflected View

POWERS insures satisfactory results wherever installed

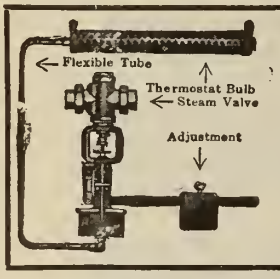
Don't Rely on a "Mind" Thermometer

Some Uses
Dry Kilns
Warming Ovens
Cooling Rooms
Dry Rooms
Tanks
Kettles
Vats

Many accidents have occurred and thousands of dollars' worth of property ruined because someone **"forgot"** to watch the temperature indicator.

Powers Automatic Regulators are scientifically designed and constructed to meet the demand for safety and protection in all situations where uniform heat is a requirement.

In the woodworking industry
where definite temperatures must be maintained—in kiln, dry room, glue pot, etc. The Powers Automatic Regulator saves labor, coal, material, and time.



The Powers Regulator No. 15
Designed especially for control of atmospheric temperatures—in drying rooms, kilns, etc. Easily installed. Can be stopped up and down at will. Entirely automatic, reliable, and accurate.

Other Powers Regulators for other specific industrial operations where heat is a factor
Heat regulation has been our sole business for over thirty years. In that time we have solved many problems for manufacturers and gained a rich fund of experience. If you will tell us where you would like to try out a Powers Regulator we will send the right one to you for thirty days' trial. If you don't find it satisfactory, send it back.

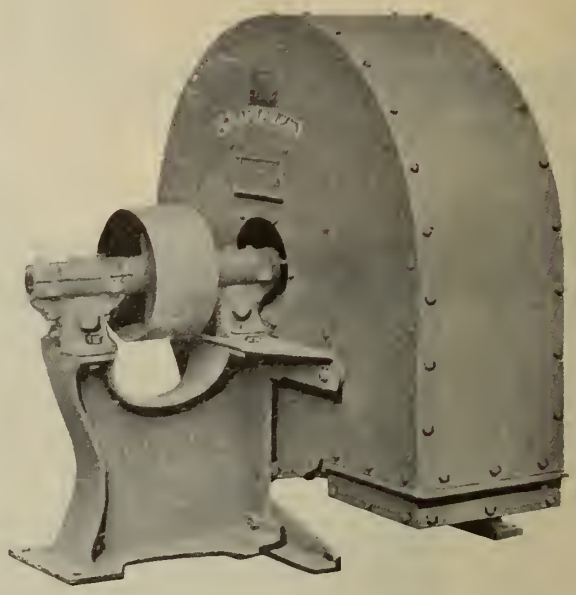
The Canadian POWERS REGULATOR Co Ltd
Specialists In Automatic Heat Control

106 Lombard Street — Toronto, Ont.

Calgary, Alta. Halifax, N.S. Montreal, Que.
Vancouver, B.C. Winnipeg, Man.

Consult your telephone directory for local address.

(1910C)



What is the Insurance Rate on Your Mill?

Dust and shavings on beams, rafters and shelves mean a greater fire risk, with higher insurance rates.

Lower the rates on your mill by installing a Sturtevant collecting and conveying system.

Folder 602 outlines specific savings to the woodworking industry.

Send for it today

B. F. Sturtevant Company of Canada, Limited

Montreal - Galt - Toronto

Sturtevant
PUTS AIR TO WORK

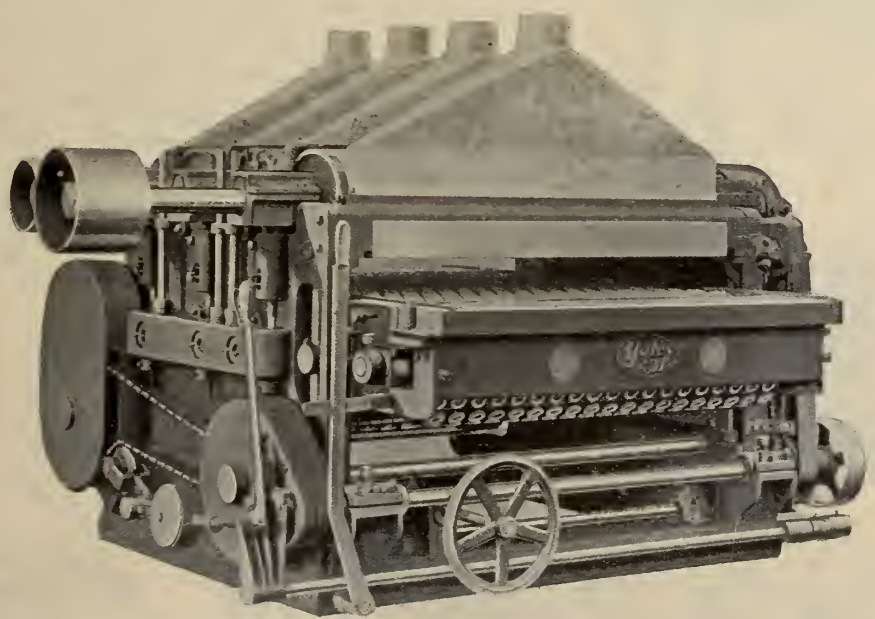
RUN SHORT STOCK ON THE YATES 431

Yates No. 431 Endless Bed Sander is especially adaptable to the running of short and narrow stock. Stock as thick as six inches, as thin as 1/16 of an inch and as short as 3 inches can be sanded beautifully by this machine. Yates No. 431 has greater capacity on this sort of work than any other.

Its range of adaptability is surprisingly great; manufacturers of kindergarten specialties, draftsman's triangles and curves as well as furniture factories have found Yates No. 431 to exceed their expectations in producing small, delicate articles.

The many advantages of this sander are described thoroughly in a complete folder which will be sent you upon request.

P. B. Yates Machine Co. Ltd.
HAMILTON — ONTARIO



The Methods of Ten Years Ago Are Out of Date Today

You Get More Work in Less Time with the

PERRIN

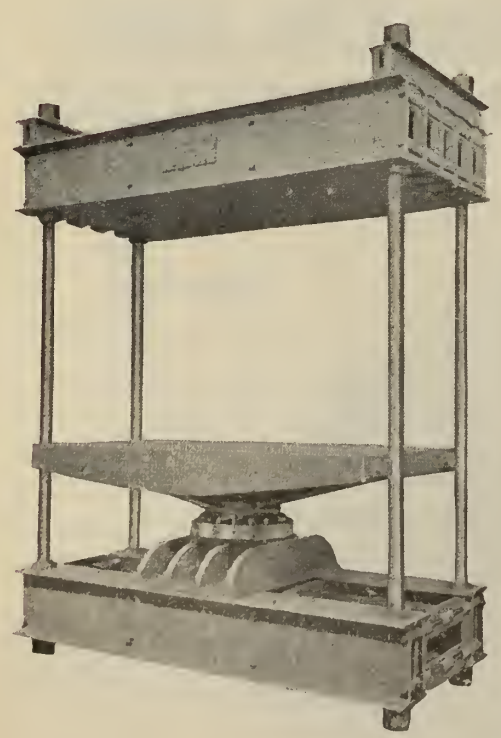
HYDRAULIC

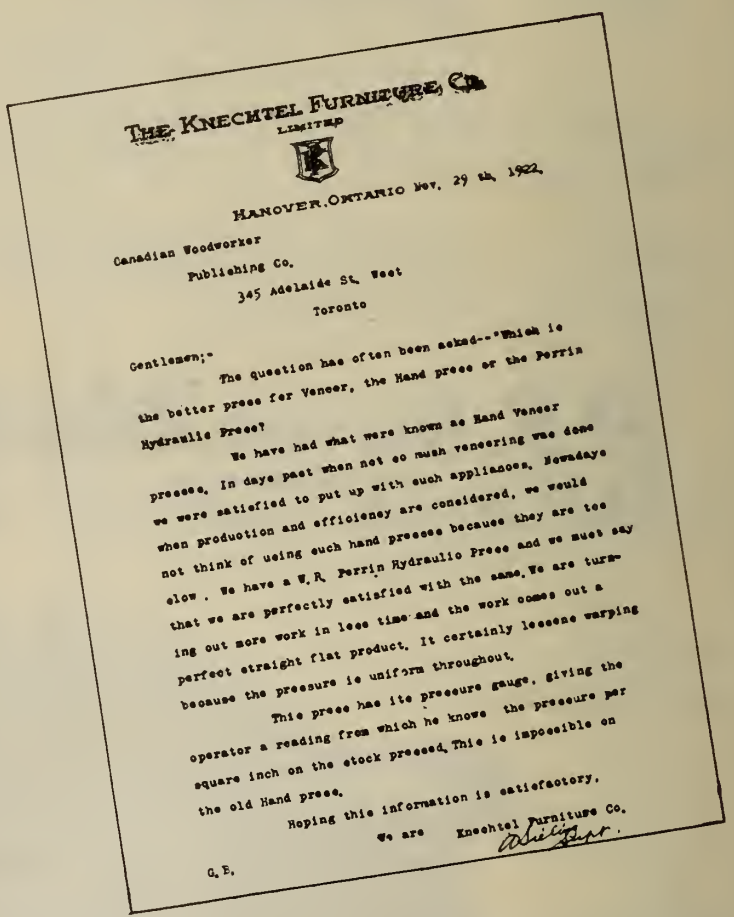
VENEER PRESS

MORE PRESSURE

MORE EVEN PRESSURE

MEASURED PRESSURE





THE KNECHTEL FURNITURE CO.
LIMITED

HANOVER, ONTARIO Nov. 29 th, 1922.

Canadian Woodworker
Publishing Co.
345 Adelaide St. West
Toronto

Gentlemen;-

The question has often been asked--"Which is the better press for Veneer, the Hand press or the Perrin Hydraulic Press?

We have had what were known as Hand Veneer presses. In days past when not so much veneering was done we were satisfied to put up with such appliances. Nowadays when production and efficiency are considered, we would not think of using such hand presses because they are too slow. We have a W. R. Perrin Hydraulic Press and we must say that we are perfectly satisfied with the same. We are turning out more work in less time and the work comes out a perfect straight flat product. It certainly lessens warping because the pressure is uniform throughout.

This press has its pressure gauge, giving the operator a reading from which he knows the pressure per square inch on the stock pressed. This is impossible on the old Hand press.

Hoping this information is satisfactory,

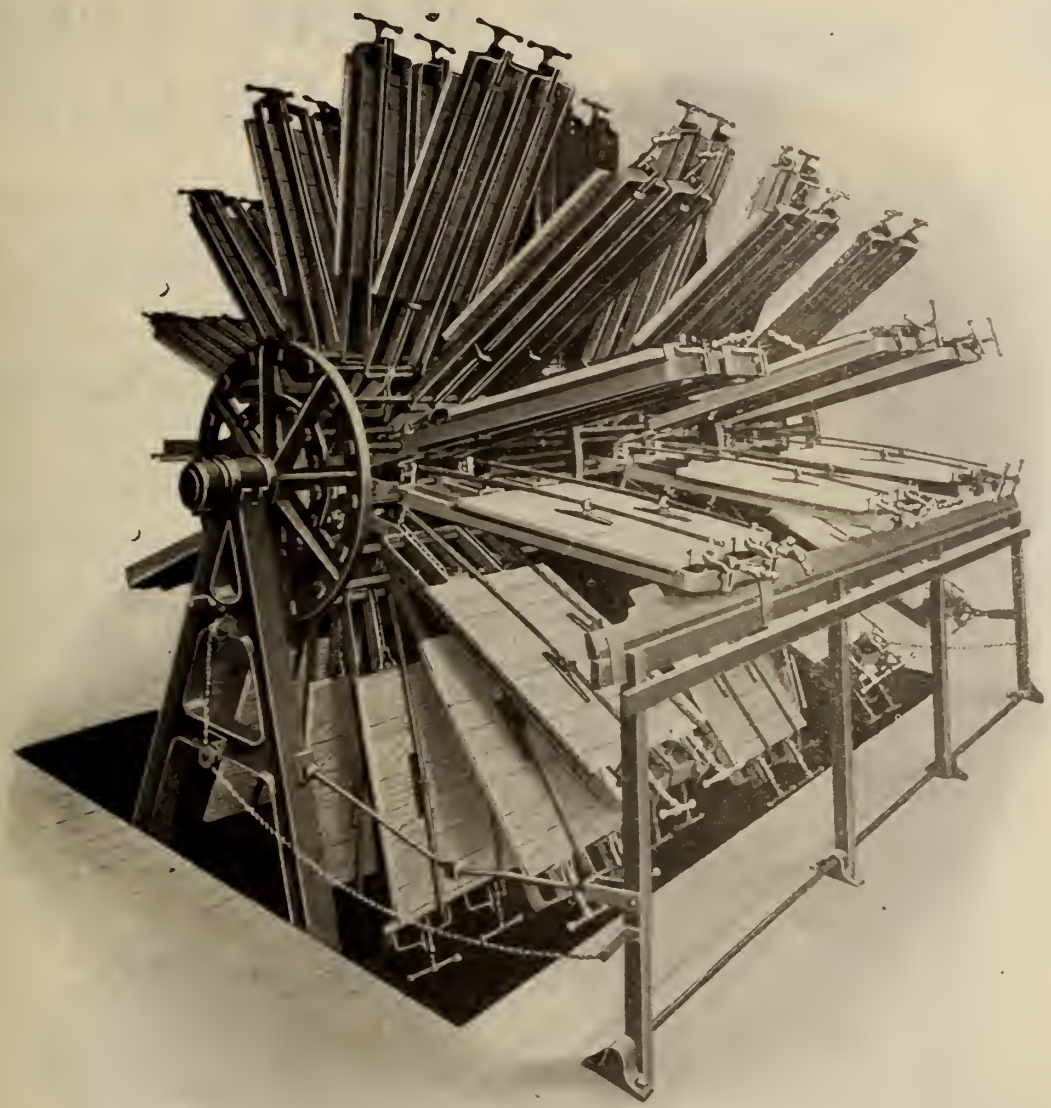
We are Knechtel Furniture Co.

G. E.

Manufacturers in increasing numbers are turning to the Perrin Hydraulic Press to speed up production and cut operating costs in their veneer departments. Here is one progressive furniture manufacturer who "would not think of using hand presses again." His reasons are many. Read the letter above.

Let us tell you more about this press. Without obligation our representative will gladly figure on cost of installation.

William R. Perrin Ltd., 530 King Street E., TORONTO



For Cores and Solid Work

This machine is scientifically designed and constructed to insure the greatest efficiency together with simplicity of operation.

It insures the rapid making of good glue joints and holds the stock off the floor until the glue has set.

With this clamp one man can produce more and better work than two can produce under old methods.

It will prove a wonderful investment for any plant where a quantity of edge gluing is done.

It is made in sizes to suit customers' requirements.

Each clamp is equipped with side brackets for short stock and a spring steel binder for thin stock.

Unequalled for clamping chair seats, furniture, dimension stock, school desks, panels, tops, etc.

Descriptive circulars and information gladly furnished on request.

Jackson, Cochrane & Company

Manufacturers of Woodworking Machinery : KITCHENER, ONTARIO

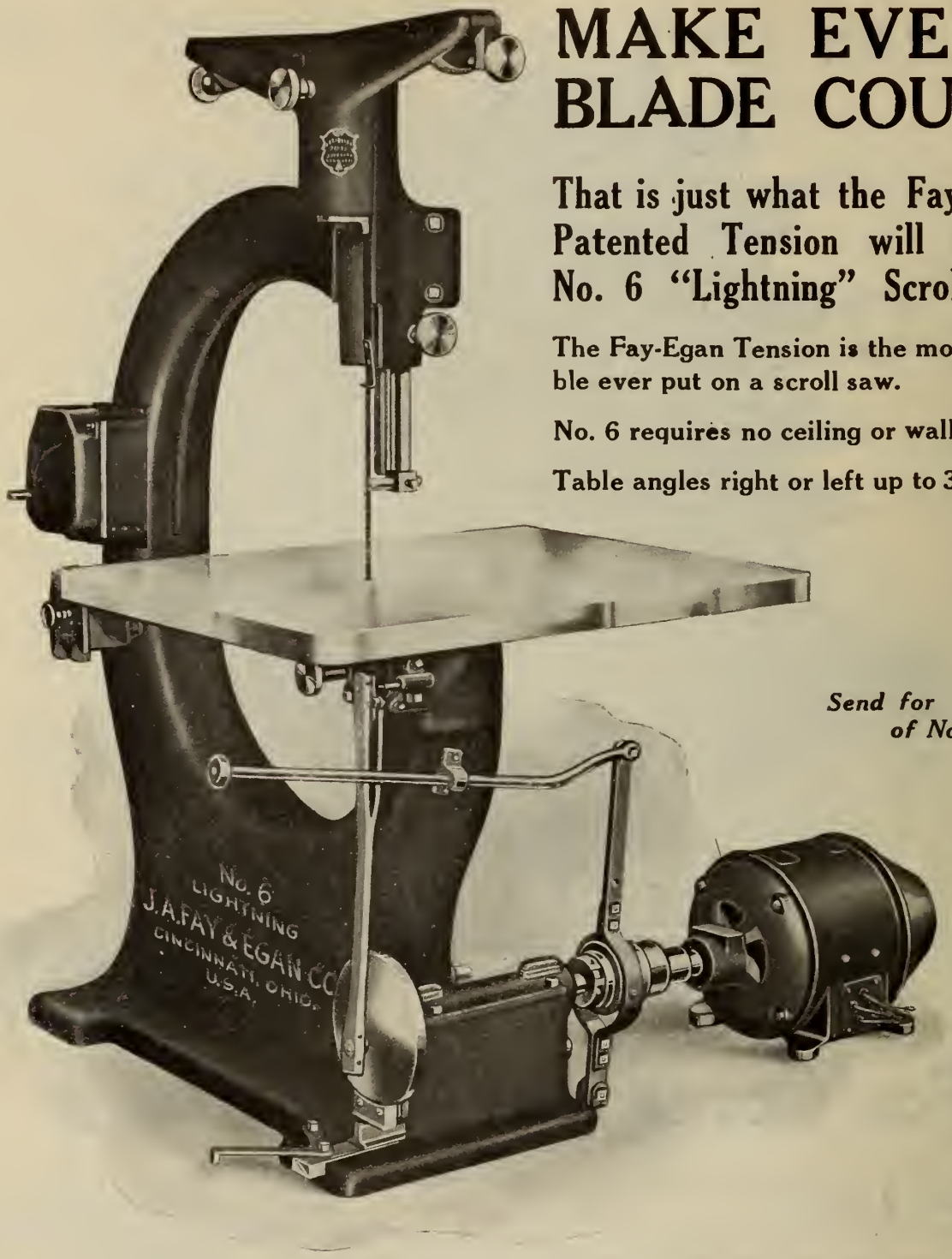
MAKE EVERY BLADE COUNT

That is just what the Fay-Egan Patented Tension will do on No. 6 "Lightning" Scroll Saw

The Fay-Egan Tension is the most flexible ever put on a scroll saw.

No. 6 requires no ceiling or wall support

Table angles right or left up to 30°



Send for Circular of No. 6

No. 6 " Lightning" Scroll Saw

J. A. Fay & Egan Company

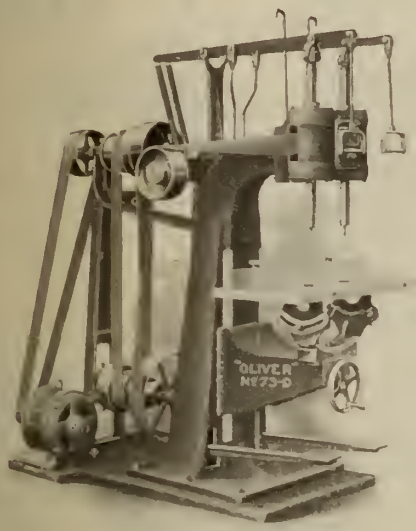
ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

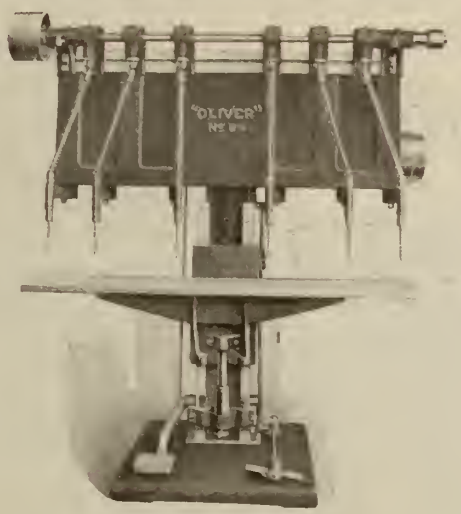
153-173 W. Front St. - - Cincinnati, Ohio, U. S. A.

Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.
Branches: Montreal, St. John, N. B., Winnipeg, Vancouver

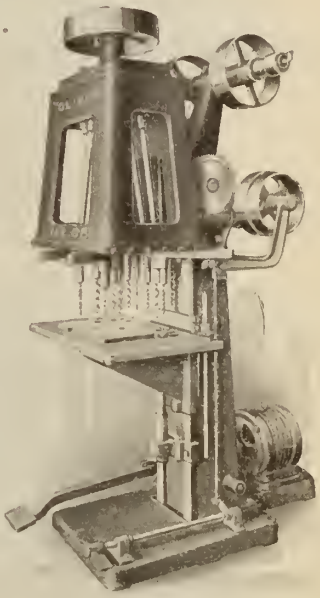
"Oliver" Quality
Boring Machines



No. 73-D Ball Bearing Double Spindle Boring Machine



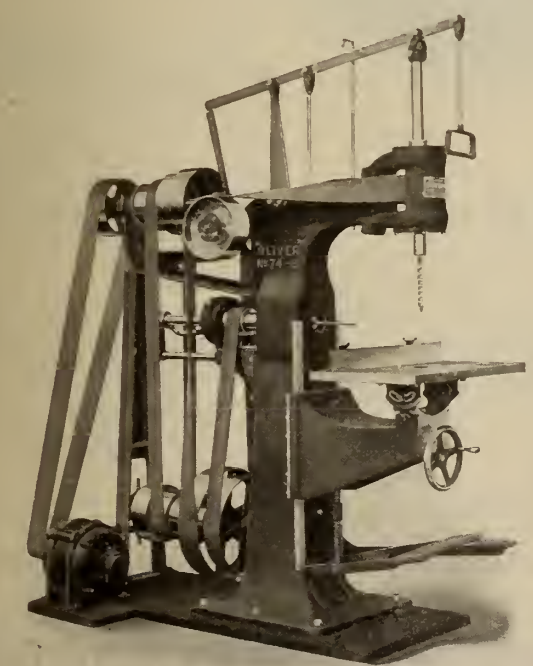
No. 69 Rail Type Multiple Spindle Boring Machine



No. 68 Plate Type Multiple Spindle Boring Machine

YOU EXPECT MORE OF AN "OLIVER" machine than any other, and you have a right to. We aim to keep up our well-earned reputation for Quality by building the Best Wood-working Machinery made.

YOU GET MORE output, efficiency, better workmanship, longer life, interchangeability of parts in "Oliver" Boring Machines—Yet they cost no more.



No. 74 Vertical and Horizontal Ball Bearing Boring Machine Arranged to give 4 Spindle Speeds

"Oliver" Boring Machines

No. 68 Plate Type Multiple Spindle.

No. 69 Rail Type Multiple Spindle.

No. 71 Radial Type—Three Adjustable Horizontal Spindles.

No. 72 Vertical Single Spindle—Built with Motor-on Spindle.

No. 73 Vertical Single Spindle—Heavy.

No. 73—D Double Vertical Spindle Machine Fixed Centres.

No. 74 Vertical and Horizontal Spindles.

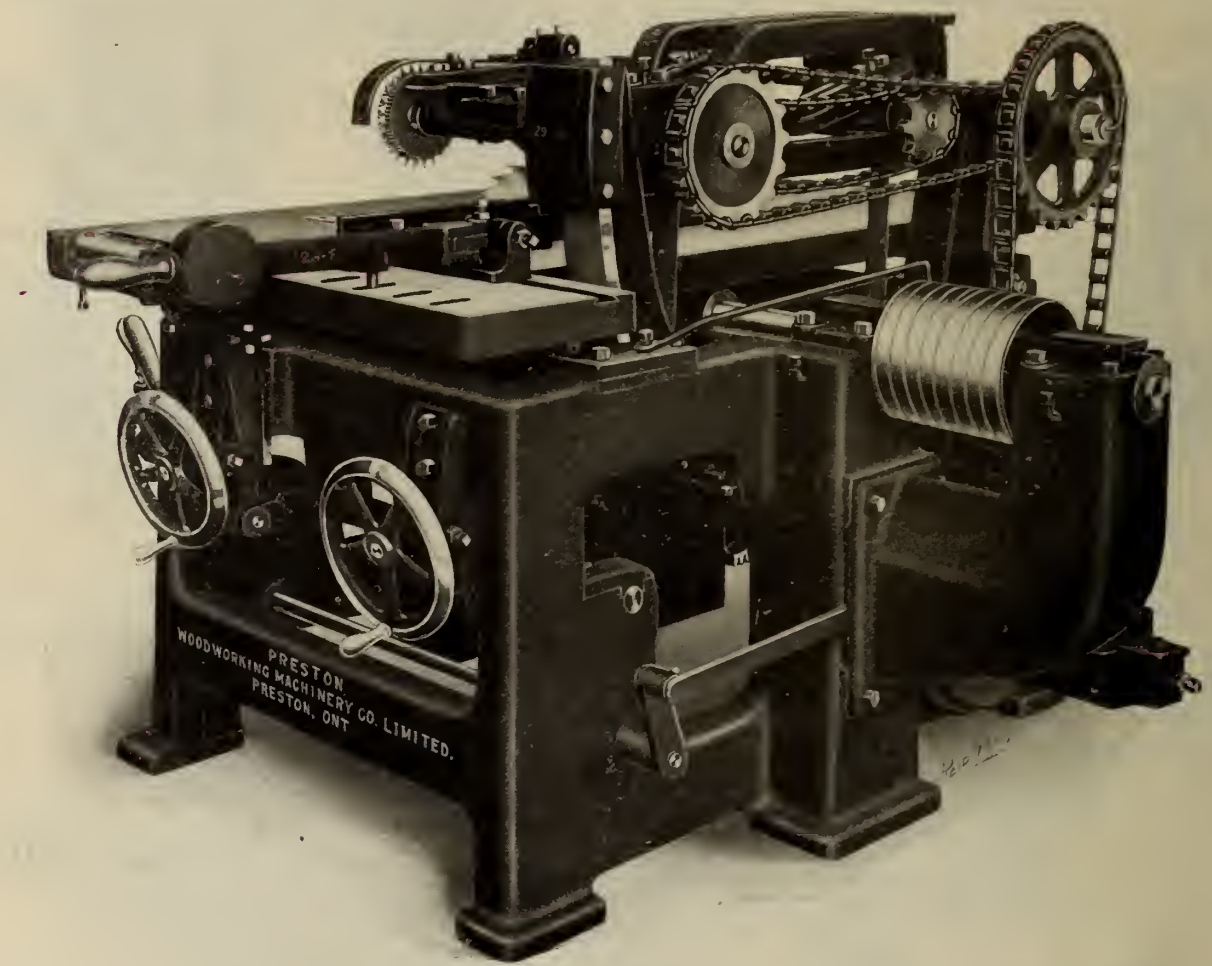
Special—Put your boring problems up to the Engineers of

Oliver Machinery Co.
Grand Rapids, Mich., U.S.A.

Big Business is Here!

Be Ready to Handle it

"PRESTON" NO. 129 POWER FEED RIP SAW



WILL HELP

It is
the most rugged machine
and
the best production machine
on the market today.

and

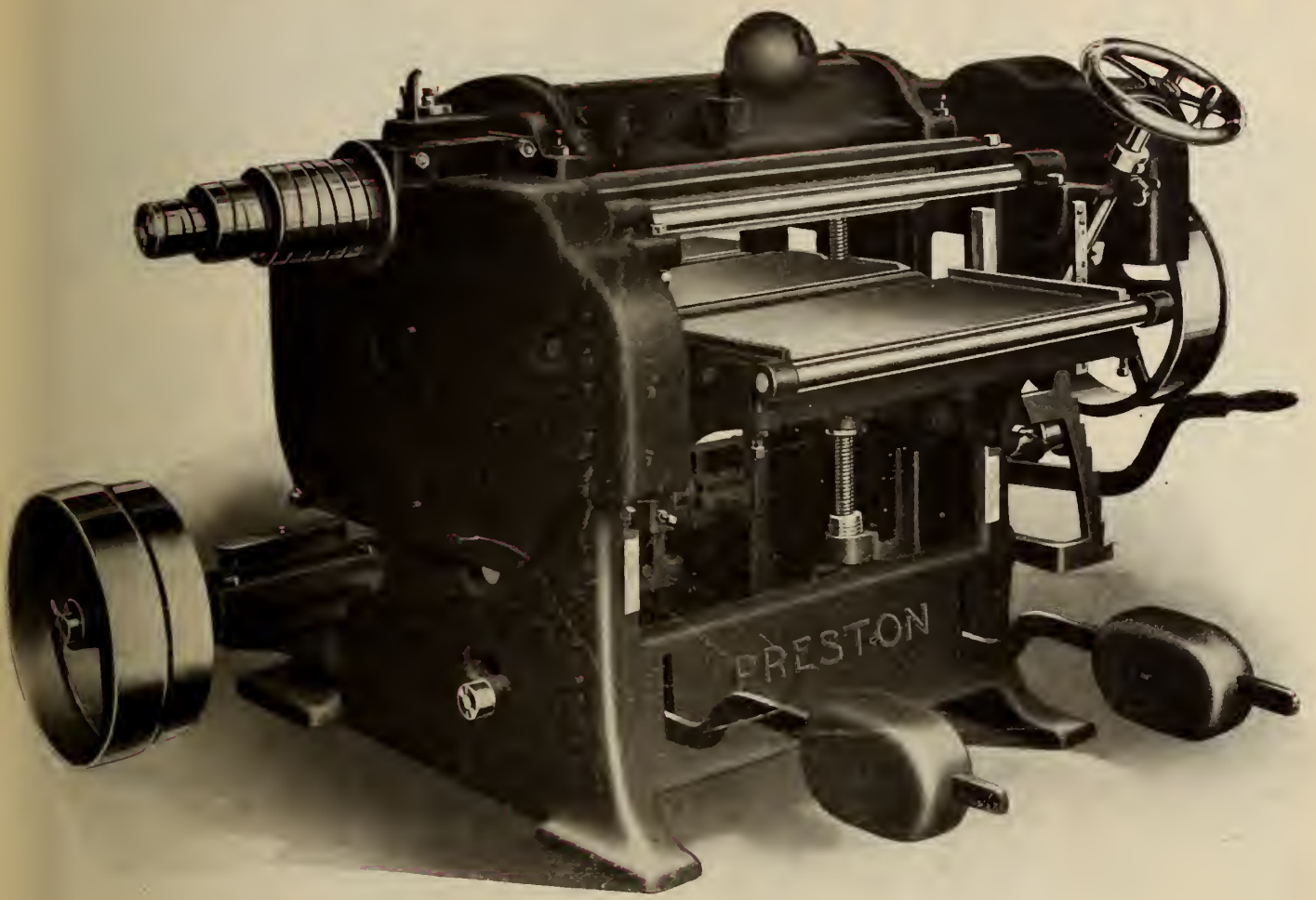
Production is What Counts

Send for a cut and let us tell you more about the machine and how many we have sold this month

The Preston Woodworking Machinery

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

No. 121 "Preston" Heavy Pony Planer



Cut Showing Standard Machine (note Guards)

This is our No. 121 Planer of improved design as now built

Planes 20″ and 24″ wide. 8″ thick

Features:—

1. Built with Straight Rolls (Standard Machine)
   or Divided Roll
   or Sectional Roll and Sectional Chipbreaker
2. Built with Square Cylinder with 2 carbon knives (Standard Machine)
   or Round Cylinder with 4 High Speed Knives.
3. Equipped with Whitney Type Babbitt Bearings (Standard Machine)
   or Specially selected SKF Ball Bearings.
4. Equipped with Stockbridge Electric Knife Grinder if desired, at extra cost.

Cylinder driven from one or both ends.

Every known improvement is embodied in this "Preston" Planer and in it we have produced a small planer which in quality and quantity of work produced will com pete successfully with larger and higher priced machines.

Company Limited, Preston, Ontario

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

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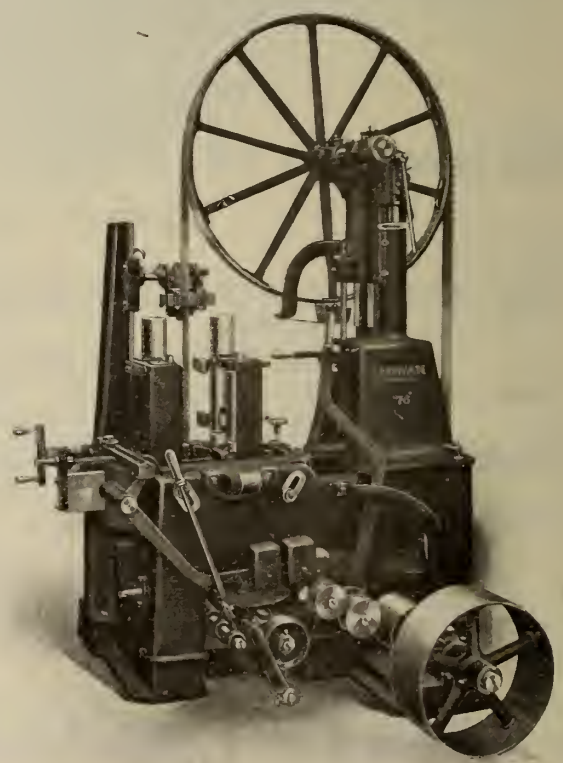
Cowan Band Resaws

The Most Satisfactory

42″, 48″, 54″ and 60″ Wheels

Various Capacities

Particulars and prices furnished on request



Cowan & Company of Galt
Limited
Galt - Canada

THE GRAND RAPIDS VAPOR KILN

We maintain a laboratory service for the benefit of the woodworking industry. It is efficient, highly specialized and properly equipped to render to you exactly what you wish to know regarding the proper drying of woods. This service is the very foundation of our continued leadership.

Technical bulletins, covering practically every phase of wood curing problems, will be sent to you upon request without the slightest obligation, and the personal service of our corps of engineers here and abroad is at your command.

Installation at Long Furniture Co., Hanover, Pa.

The large photograph of this installation shows the supply and return mains, with control valves, pressure gauges and traps.

In this case it was placed in the rear of the battery of 5 Grand Rapids Vapor Kilns.

Complete satisfaction has resulted from this installation, which is but another evidence of the fact that wood curing problems are always solved when a proper diagnosis of the trouble is first made. This determination of the best method to suit particular cases leaves no opportunity nor excuse for faulty construction.

Not only is the Grand Rapids Vapor Kiln replacing all other types of equipment throughout the nation but the fact that 41 per cent of our business during 1921 and 1922 was composed of repeat orders is conclusive evidence of 100% efficiency and satisfaction rendered by this method. Repeat orders, in our case, means additional installations of kilns to the batteries already built and in operation. Everywhere those connected with the woodworking industry are learning that the Grand Rapids Vapor Kiln scientific method of curing accomplishes the work better and in less time than was possible with the equipment they had known and used previously.

GRAND RAPIDS VAPOR KILN

Main Office and Factory, Grand Rapids, Mich.

Engineers—Contractors—Manufacturers

Western Representative: E. F. Tindolph, 1608 Hoge Bldg., Seattle, Wash.

FOREIGN OFFICES:

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A. R. Williams Machinery Co. St. John, N.B.

The Oliver Machinery Co. Manchester, England

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The Pioneer Appraisal Organization of Canada

Established 1905

"An adjustment of fire insurance in accordance with existing values is a universal necessity. Many people who now believe that they are properly covered against the fire risk are, in reality, inadequately covered. Morever, realization of these facts is by no means general."

The Chronicle

Over 85% of the appraisals made during the past fifteen years of Canadian manufacturing and industrial properties have been carried out by us, aggregating some 5.000. properties, and include over 250 lumber and woodworking plants.

Correspondence invited

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Royal Bank Building

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364 University Street

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The Test of An Appraisal

"We have never been so grateful for anything we have done as for the appraisal made by you in December 1919. It certainly was worth thousands of dollars to us in the adjustment of the fire."

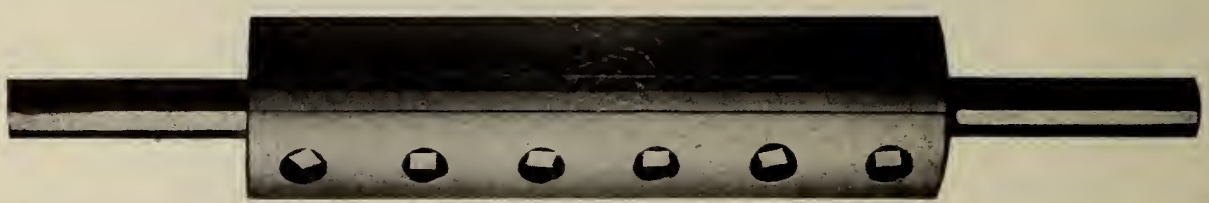
Port Arthur Daily News Limited
May 5th, 1921

Our staff of qualified appraisers—men with many years experience in the appraisal field—and our system of careful supervision of all work entrusted to our care has afforded protection to our large clientel extending throughout the Dominion of Canada.

We solicit your correspondence

8-10 Wellington Street East
TORONTO, ONT.
Telephone Main 646.

The Shimer Round Safety Cylinder with High Speed Knives



A Round Safety Cylinder that will Appeal to the Buyer and the User for three Reasons:

The first is our adjusting nut for setting the knives. It is the only cylinder with properly located adjusting nuts for setting the knives, which, with our way, can be set to 1-1000 of an inch.
The second is our way of holding the knife without tapping into the head.
The third is the correct angle of cut for the knives.

Made for any of the different Makers' Machines and in Any Length Cylinder

WRITE FOR PRICES

SHIMER CUTTER HEAD CO., OF CANADA, LIMITED

Manufacturers of Cutter Heads, Safety Cylinders and Grinders

GALT, ONTARIO

Showing Ten Distributing Points

Send your orders to us at South Bend, Indiana, for

PERKINS

183

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and we will ship at once from best point shown on above map. Prompt service and uniform quality distinguishes our business and product.

Patents covering Perkins Glue have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy, and other foreign countries.

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Sales Office:
South Bend, Indiana

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A Slow Speed Low Power Blower System Is a Good Investment

We manufacture Blowers and Blower Systems of every description and have expert mechanics to INSTALL ALL SYSTEMS COMPLETE. In this way we assume the entire responsibility for the satisfactory operation of the system.

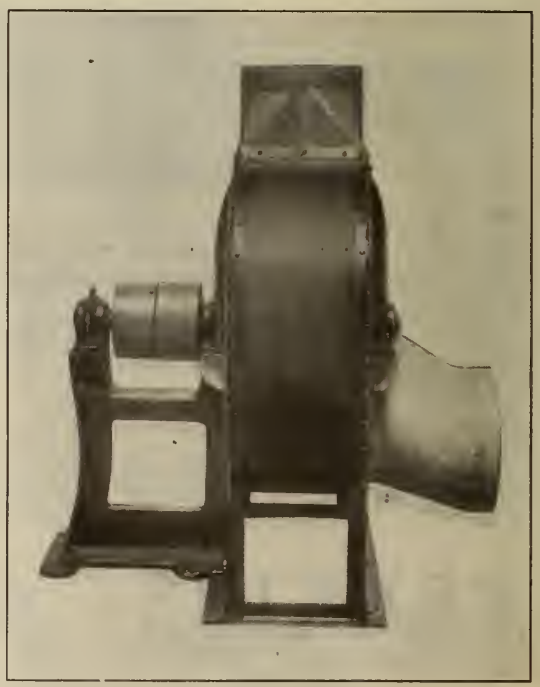
The "Foster" Fan will handle any conceivable material without clogging. It is the only suction fan that has a bearing on the inlet side, thereby eliminating the overhung wheel.

One of our experts will gladly estimate the cost with no obligation to you.

TORONTO BLOWER CO.

Office and Works:

156 Duke St. - TORONTO



Showing end view and S.K.F. bearings of 35-inch Blower and Exhauster, equipped with tight and loose special ball-bearing pulleys

Going to Build Additional Kilns?

You May Not Have To Do So
After You Consult Us

The MOISTAT System

attached to your present equipment
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Not only that—
It eliminates kiln drying hazards.

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Sand and Garnet Papers and Cloths
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When used in describing a **Cannon Glue** is more than a claim. It is an established **fact!**

We have customers in Canada who have used one brand for fifteen to twenty years without one cause for complaint.

CANNON CANADIAN CO., LTD.
TORONTO **MONTREAL**

THE SUPERIOR GLUE

Greater Spread
Greater Tensile Strength
Greater Uniformity

LET US PROVE IT

KANE MANUFACTURING CO.

1832-34 South Clark Street **CHICAGO, ILL.**

MONITE GLUE

Sticks To Its Job

THE familiar slogan "Monite Glue Sticks To Its Job" is backed by ample evidence. It not only meets all specifications of the Bureau of Standards, but in every instance it exceeds them.

That Monite Glue sticks to its job is shown by the sheer strength of 2641 pounds it has averaged on samples submitted to the Forest Products Laboratory over a period of years. It is also shown in any test of waterproofness you might care to make. You can boil Monite Glue Panels steadily for ten hours—you can bake them until the wood is charred—yet the glue joint remains unaltered.

Takes half as long to mix. Gives a greater spread. Sets more quickly. Average sheer strength 2,641 pounds per sq. inch. Uniform quality varies less than 1% guaranteed. Improves the product, gives longer life.

Monite Sticks To Its Job

Monite Glue will even hold together a joint longer than the normal life of the wood, because in addition to its strength and water resistance Monite Glue actually preserves the wood it joins.

The advantages of using a glue that adheres in spite of the ravages of time and the elements will come back to you manyfold in the satisfaction your product gives its owner. We will be pleased to demonstrate that "Monite Glue Sticks To Its Job." Write and we will make such a test at your convenience.

Monite Waterproof Glue Company

1628 North Second Street Minneapolis, Minn., U. S. A.

Cable Address: Monite—Minneapolis

Canadian Representatives:

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WATERPROOF GLUE

COIGNET FRENCH GLUES

Make the Strongest and Most Durable Joints

Scientifically Graded

Each Sheet Stamped with Grade Name or Number

Uniformity Guaranteed

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Keep the GUESS out of GLUE WORK

with

Mixes cold in cold water.

Economical —Spreads well.

WATERPROOF GLUE

UNIFORM STRONG HEAT-RESISTANT RELIABLE

Send for "CASCO" Manual

The Casein Manufacturing Company

Largest and Longest Established Manufacturers of Casein Products in America : :

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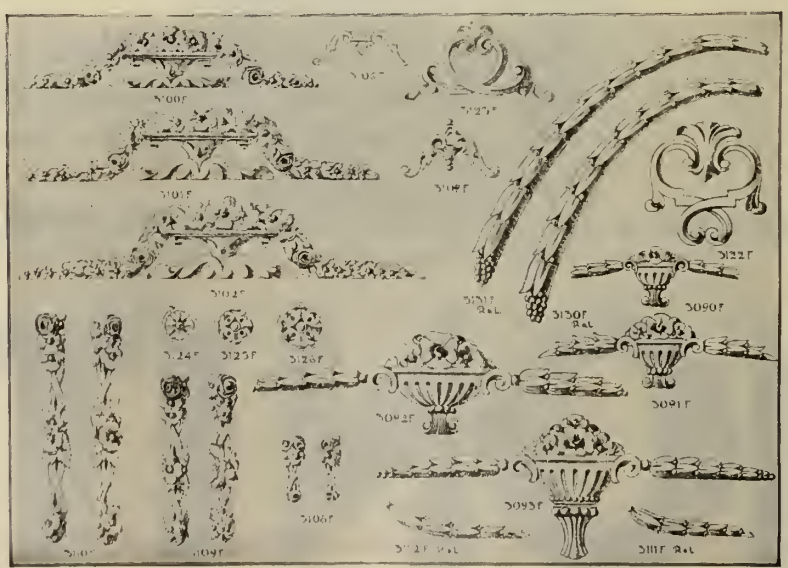
Largest Manufacturers of Imitation Wood Carvings in the World Quality the Best. Prompt Shipments



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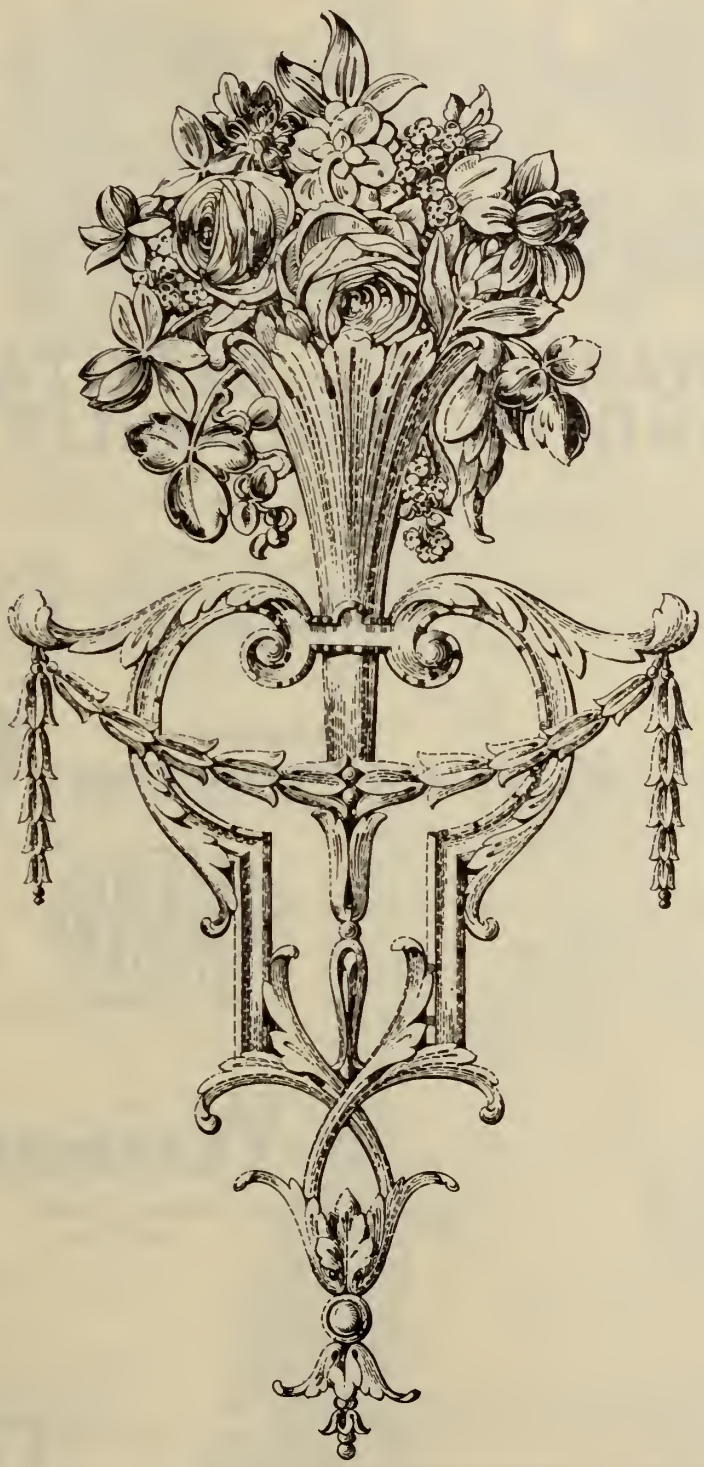

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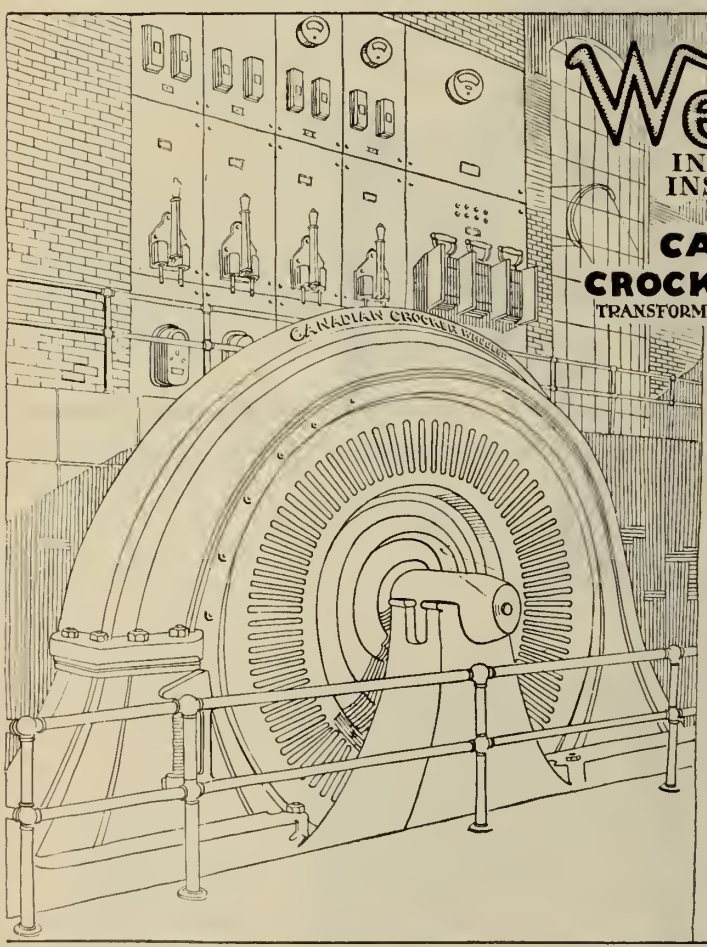
OF ESTABLISHED REPUTATION AND DEPENDABILITY



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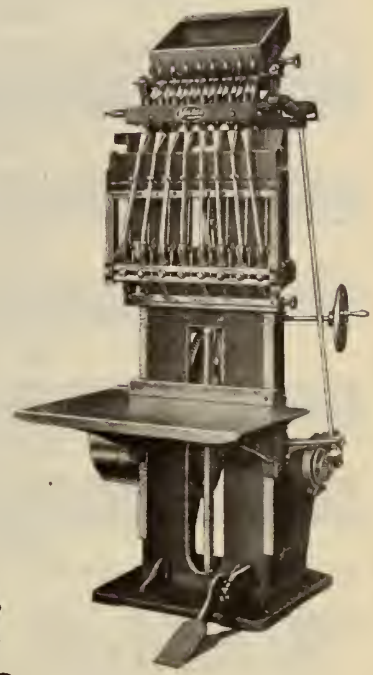
which will do your nailing, quicker, better and cheaper than was ever thought possible by hand.

Latest improved head. Single or double row chucks. With or without clincher. Belt or Direct motor drive. Open and Closed Back types. Built in different sizes.

Upon request, we will send you complete details about these machines.



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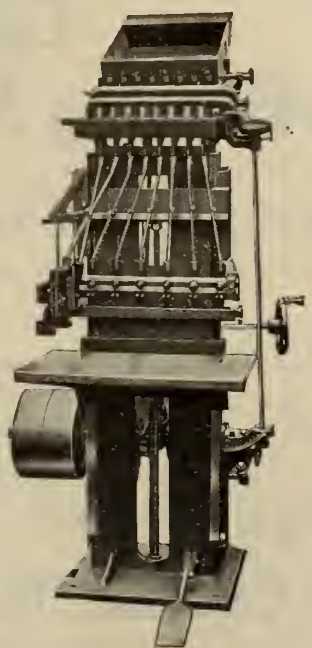
BOX NAILING AND CLEATING MACHINES

ENTIRELY AUTOMATIC

EASILY OPERATED



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INSTANTLY ADJUSTED

MADE IN ALL SIZES

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MATTHEW WYLIE & Co. Ltd.
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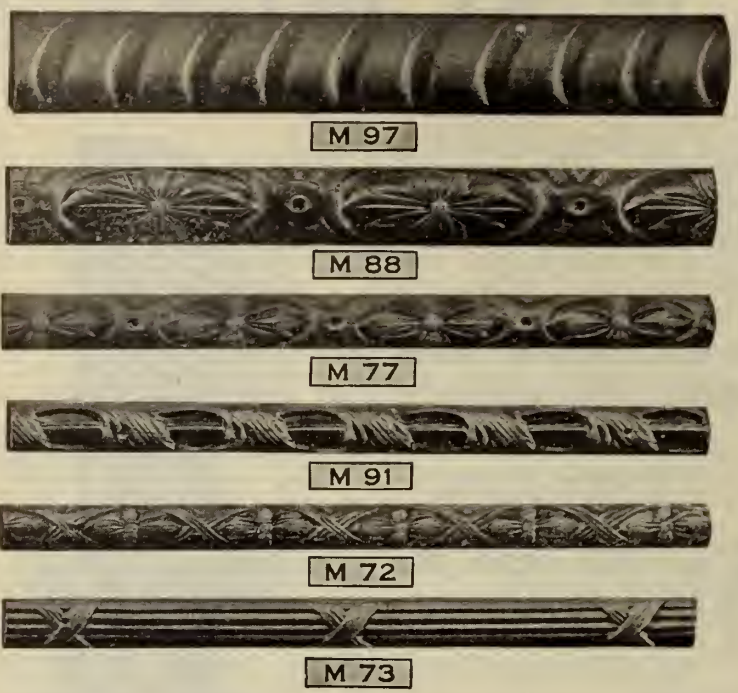
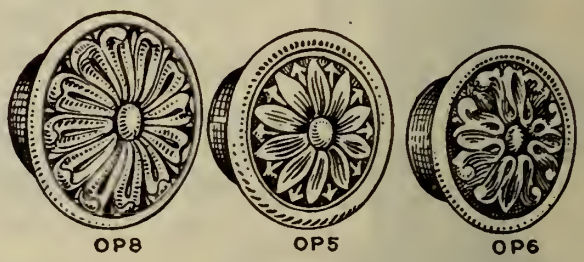


MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

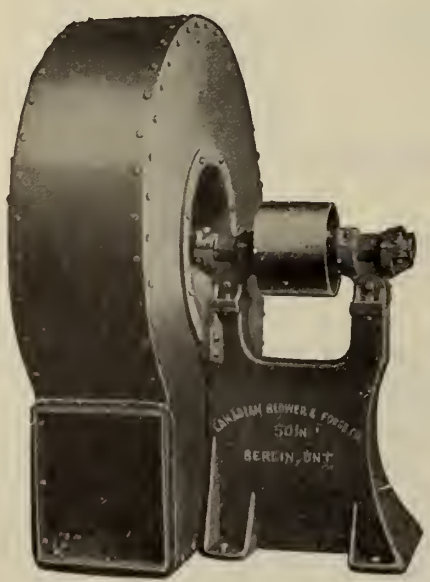
KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.



Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**



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Keep your shop clean, remove your sawdust, shavings, or other loose material.

A clean shop with machines free from shavings, chips or sawdust makes for greater efficiency.

Let our engineering department help you plan your refuse exhaust system.

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Sold by Aikenhead Hardware Ltd., Toronto Vokes Hardware Co., Ltd Toronto J. L. Neilson & Co., Winnipeg and other leading dealers throughout Canada.

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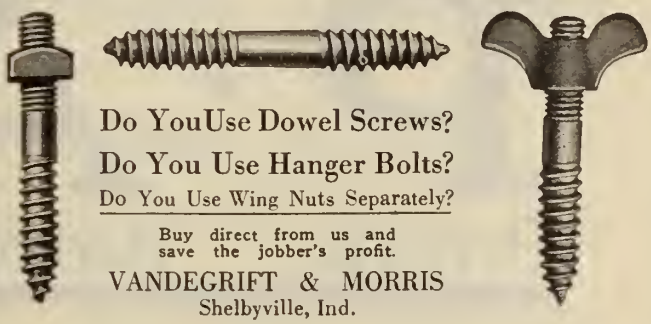

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Do You Use Hanger Bolts?
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"KLISE" mouldings are carved, not pressed. Made in several hundred classic, period designs, in various sizes and shapes. Catalogue of legs and samples of mouldings sent on request. Send us your designs or samples of carvings for quotation.

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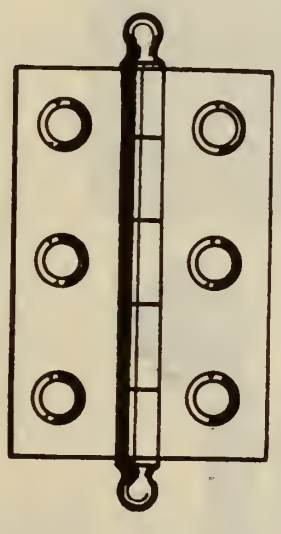

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1″ 1¼″ 1½″ 1¾″ 2″

In any desired finish

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Glass Paper, Flint Sand Paper, Garnet Paper
IN SHEETS AND ROLLS FOR ALL PURPOSES

Rolls 50 yards long, 18 in., 20 in., 24 in., 30 in., 36 in., 40 in., 42 in. and 48 in., wide

SHEETS, DISCS, STRIPS AND BANDS can be made to Special Sizes to suit the requirements of Purchasers

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Turn the Dial and immediately your call not only reaches the engineer, the shipping room,—any executive—but the call is for yourself only.

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LIMITED

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BAND SAWN **MAHOGANY LUMBER** EXCLUSIVELY

We always carry a large stock of high grade Mahogany Lumber in all dimensions and grades on our yard in New Orleans

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AMERICAN BLACK WALNUT

LUMBER **VENEERS**

OUR SPECIALTY

A goodly supply of choice stock on hand at all times.

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It will be a pleasure to figure on your requirements. With the growing demand and the increasing popularity of Black Walnut, you, naturally wish to be prepared to meet this demand. Our suggestion is that you cover your needs early.

1/28" SLICED WALNUT VENEERS

especially selected for quality wood and color.

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For every service, vertical and horizontal

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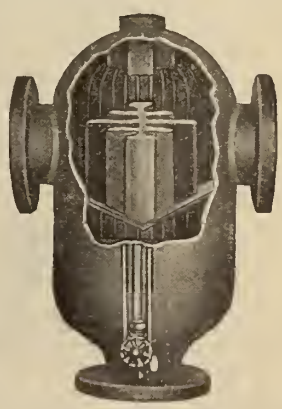

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Let us solve your glue problems. Our Service Department is at your disposal and places you under no obligation whatsoever.

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Southern Hardwoods
MISSISSIPPI DELTA GUM
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OUR mills are producing some beautiful stock at the present time, and we can assure prompt delivery in any quantity.

Plain and Quartered Red and Sap Gum, Plain and Quartered White Oak, Plain Red Oak, Cottonwood, Cypress, Ash, Elm.

Write for prices and full particulars

MISSISSIPPI VALLEY HARDWOOD CO., INC.

Bandmills: Memphis, Tenn., Clarksdale, Miss.
Sales Office: Memphis, Tenn.
MISSISSIPPI DELTA GUM The Best That Grows

To Our Friends

We announce with pleasure the consolidation of our entire interests with the Kneeland-Bigelow Company and Kneeland, Lunden & Bigelow Company, effective January First, Nineteen Twenty Three. This amalgamation will thereafter be operated as a corporation with the present officers and management under the title of

Kneeland-Bigelow Company

The extensive timber resources and manufacturing and distributing facilities of the combined interests will promote more efficient organization and highly developed service to the benefit of our customers. We bespeak for the new organization the same consideration accorded us in the past.

Respectfully

THE BIGELOW-COOPER CO.
BAY CITY - - MICHIGAN

Why you can depend upon Long-Bell Hardwoods

Logs from our own virgin forests.

Each log selected and cut for the purpose for which it is best adapted.

Class of timber producing excellent widths and lengths.

Manufactured in our own Hardwood Mills, equipped with modern band machinery.

Manufacture supervised by experienced hardwood men.

Thoroughness given every detail of manufacture.

Particular care given to uniformity of thickness—carefully edged, equalized and trimmed.

End-butted with mitre toothed saws.

Carefully sorted at chains.

Drying yard arranged to give thorough circulation to stocks in pile.

Every detail in sticking and drying carefully observed to insure best results.

Experienced inspectors grading lumber for shipment.

Double check inspection at cars in loading to insure uniform grades.

Same care exercised in loading in car as in manufacture.

Easily identified by the Long-Bell trademark on the end of every board.

The Long-Bell Lumber Company

R. A. LONG BUILDING Lumbermen since 1875 KANSAS CITY, MO.

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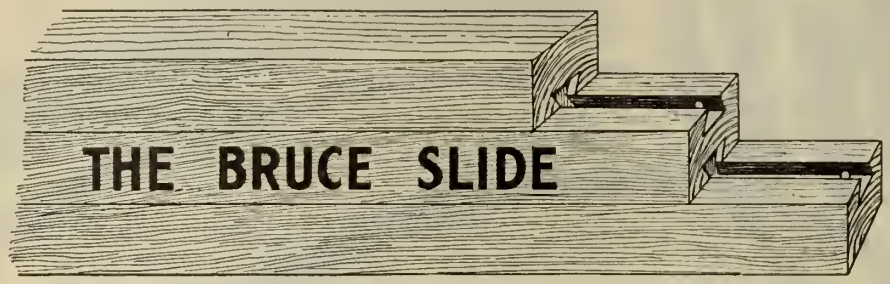

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The "Bruce Slide"

BRUCE WOODWORKERS, Limited, Chesley, Ont.

Southern & Northern Hardwoods

High Grade Lumber and Service

RED GUM, SAP GUM
(plain or quartered)

OAK
(plain or quarter cut)

Are Our Specialties

—also—

ASH, MAPLE, BIRCH, POPLAR
SOUTHERN ELM, WALNUT
COTTON WOOD, CYPRESS
MAHOGANY, TUPELO

When you need lumber write or wire to

Charles O. Maus Lumber Co.
South Bend, Ind., U.S.A.

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Window Frame Machines

This is the work ☞

Let us tell you about the machine.

Testimonials from hundreds of satisfied users.

F. V. Phillips invented and built window frame machines for 40 years. "The Phillips Line" is the culmination of his efforts.

Your inquiries solicited.

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FACTORY TRUCKS

Regular size 24 x 48.
Stakes 30 inches high.
Centre wheels 14½ in., diam., 2 in. face.
Steel stem castor wheel 6 1/4 in. dia., 1 1/4 in. face.
Weight 160 lbs.
Special sizes to order.

MANUFACTURED BY

P. E. SHANTZ, PRESTON, ONTARIO.

Factory Truck Style No. 26.

Stimson Veneer and Lumber Co.

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Office and Mill: McLean Ave. and Union Belt R.R.

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We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK

3	cars	4/4"	Fas.
5	"	4/4"	No. 1 Common.
1	"	4/4"	No. 2 Common.

PLAIN WHITE OAK

2	cars	4/4"	Fas.
2	"	5/4"	No. 1 Com. & Btr.
3	"	4/4"	No. 1 Com. & Sel.
3	"	4/4"	No. 2 Common.

QUARTERED RED OAK

3	cars	4/4"	Fas.
6	"	4/4"	No. 1 Common.
2	"	4/4"	No. 2 Common.

PLAIN RED OAK

2	cars	4/4"	Fas.
3	"	5/4"	Fas.
3	"	6/4"	Fas.
2	"	8/4"	Fas.
8	"	4/4"	No. 1 Common.
2	"	5/4"	No. 1 Common.
2	"	6/4"	No. 1 Common.

QUARTERED RED GUM

2	cars	4/4"	Fas.
2	"	4/4"	Fas. Fig.
2	"	5/4"	Fas.
2	"	6/4"	Fas.
10	"	4/4"	No. 1 Common.
2	"	5/4"	No. 1 Common.
2	"	6/4"	No. 1 Common.

QUARTERED RED GUM S.N.D.

5	cars	5/4"	No. 1 Com. & Btr.
5	"	6/4"	No. 1 Com. & Btr.
10	"	8/4"	No. 1 Com. & Btr.

ASH

4	cars	10/4"	No 1 Com. & Btr.
2	"	12/4"	No. 1 Com. & Btr.
1	"	6/4"	No. 1 Com. & Btr.
2	"	4/4"	No. 1 Common.
2	"	4/4"	No. 2 Common.
2	"	5/4"	No. 1 Com. & Btr.

SAP GUM

8	cars	4/4"	Fas.
3	"	5/4"	Fas.
3	"	6/4"	Fas.
15	"	4/4"	No. 1 Common.
8	"	4/4"	No. 2 Common.
5	"	5/4"	No. 1 Common.
5	"	6/4"	No. 1 Common.

COTTONWOOD

2	cars	4/4"	Fas.
6	"	4/4"	No. 1 Common.
3	"	4/4"	No. 2 Common.

ELM

2	cars	4/4"	Log Run.
2	"	5/4"	Log Run.
1	"	8/4"	Log Run.
6	"	10/4"	Log Run.
6	"	12/4"	Log Run.

MILLER, STURM & MILLER
Hardwoods of All Kinds
1142 Seneca Street

BUFFALO *"Buy and Sell Hardwoods in this Market."*
FAMOUS LUMBER CENTER
Unequalled facilities for rapid dispatch, by Rail, Lake or Barge Canal, on all your requirements, large or small.
SUPPLYING THE HARDWOOD NEEDS OF THE NATION

Taylor & Crate Hardwoods of All Kinds
A stock of 18,000,000 to 20,000,000 ft. of Hardwoods carried at all times at our big Buffalo yards.
RAIL AND CARGO SHIPMENTS
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Prompt Shipments—from Buffalo Yards or from Mill direct to you
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We specialize in—WHITE ASH, OAK AND MAPLE

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HARDWOODS
Our Specialty—West Virginia and Pennsylvania Cherry
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A complete stock of seasoned Hardwoods
Including Ash, Basswood, Birch, Cherry, Chestnut, Cypress, Elm, Gum, Hickory, Maple, Plain and Quartered Oak, Poplar and Walnut.
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T. SULLIVAN & COMPANY
NORTHERN
Gray Elm and Brown Ash
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FRANK T. SULLIVAN
Specialties
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Main Office: 600 Ellicott Square. Yard: 2598 Delaware Ave.

1" to 4 No. 1" Common and 1s & 2s **HARD MAPLE**
Excellent widths and lengths.
Can kiln dry and surface.
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Our Specialities
Oak Poplar Ash Maple
932 Elk Street

Half a Century of Integrity and Vision

THE TWENTY years following the Civil War saw the foundations laid for many of our greatest industrial organizations. During this sturdy period—in 1872—Herman Behr set to work alone in a one room factory to produce by hand a better sandpaper than the world had known.

In 1880 the young pioneer introduced Garnet, until then unknown as an abrasive and thus marked his first great sandpaper innovation. Since that time Herman Behr and the organization he built have constantly been pioneers in sandpaper improvements.

From the first hand-made sheets to the enormous production schedule of today, sincerity to high ideals has been the most important ingredient in Behr Quality Abrasives.

Our products have grown from "just sandpaper" to thousands of different items of coated abrasives, in yearly quantity enough to pave the Lincoln Highway from coast to coast.

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We Want to Sell

6 cars 4/4 1 & 2's Plain Red Oak.

1 " each 5/4, 6/4 & 8/4 1 & 2's Plain Red Oak.

3 " each 6/4 Plain Red & White Oak Step Plank 10" & up.

3 " 4/4 Clear Face Qtd. White Oak Strips 2½ to 5½".

3 " each 4/4, 5/4, 6/4, and 8/4 not Common & Selects Qtd. White Oak.

Band Sawn Soft Textured

Louisville Point Lumber Co., Inc.

1144 Fulton St. - Louisville, Ky.

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Ply Wood Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

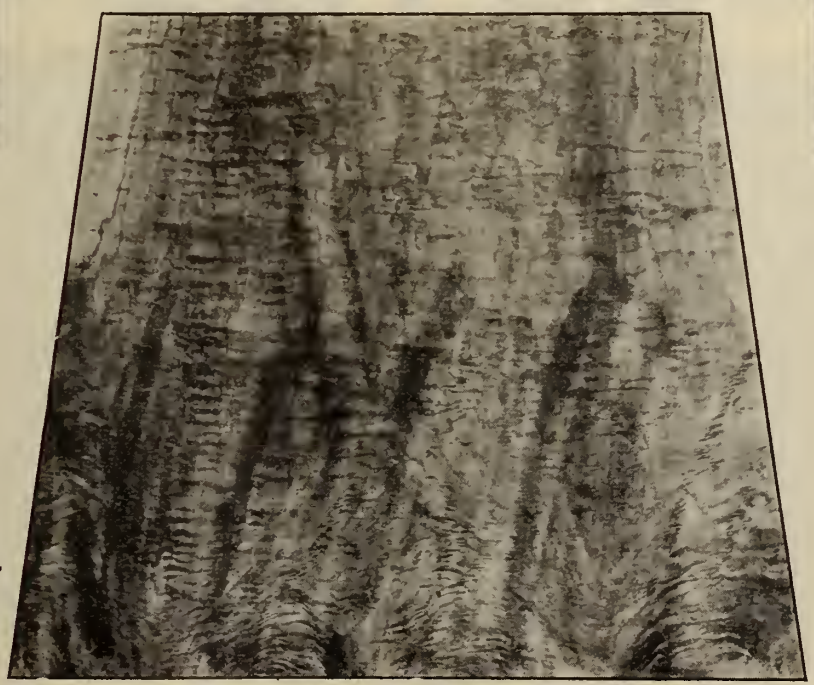
BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

Walnut?—Yes,—Good Walnut?—Yes!
Pickrel

Walnut's sheer beauty, strength, uniformity and permanence brought it in a few years to unquestioned supremacy in furniture construction. Dominance in furniture proves but the beginning. This surpassing merit is every day compelling increased use in new cabinet fields. Pickrel walnut veneers fill an important place in this wider development. A limitless selection of quality veneer logs, careful and skilled manufacture and a constant stock of five million to seven million feet of nicely assorted woods have given Pickrel walnut veneers a special significance. Buyers will appreciate the responsible, conscientious and experienced representation through which Pickrel veneers are offered at their respective plants. It assures the closest possible conformity to the individual requirements of each—meaning less cost in working and a better product.

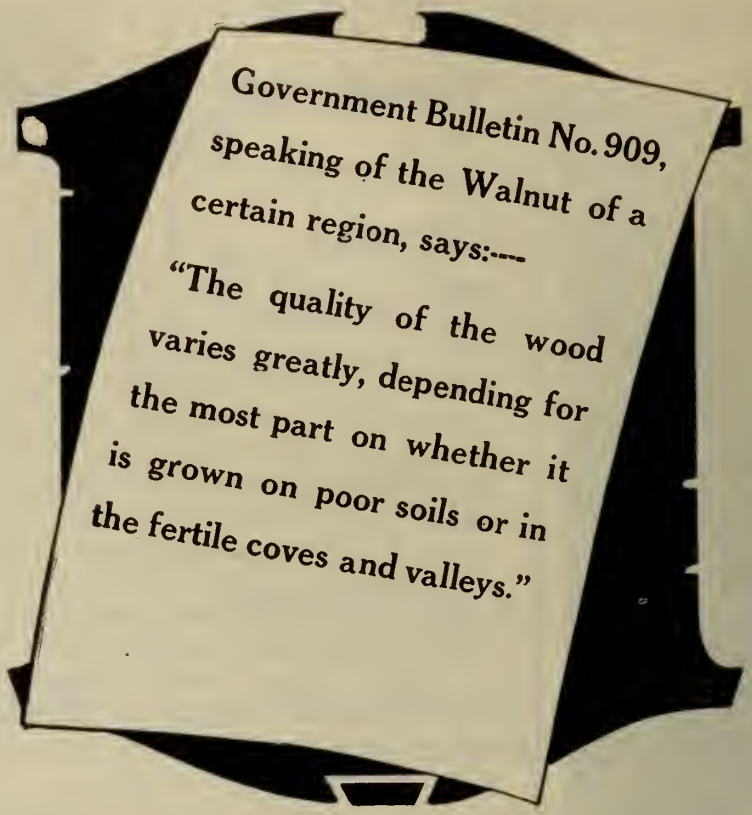
PICKREL VENEER CO.

New Albany, Indiana



Read

this government report



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IOWA WALNUT

is grown cut from selected logs grown in the fertile river valleys of Iowa.

If fertile soil means better lumber, then it is small wonder that **Iowa Walnut** is distinctly finer in grain, and more beautiful in marking; for the fertility of Iowa's deep black soil is world famous.

These naturally endowed logs are cut in a mill devoted exclusively to walnut production, with the most modern equipment selected with special attention to the needs of walnut production and by men skilled in handling this most beautiful of hardwoods.

The resultant **Quality** of Iowa Walnut lumber and Veneers has placed them in the products of many of the leading American furniture makers. Why not in yours?

Des Moines Sawmill Co.

1021 Murphy Street
Des Moines, Iowa

Write or Wire for Quotations on this Better Walnut—It's no Higher than Ordinary Walnut

"Hartzell's Choice Walnut"

The way Walnut comes to us

COMING AND GOING

One constant stream of American Black Walnut from "Stump to Consumer" flowing through a steady, reliable and satisfactory channel.

"Geo. W. Hartzell"

Logs in the rough coming in Veneers and Lumber of the highest quality going out daily year in and year out covering a period of 35 years.

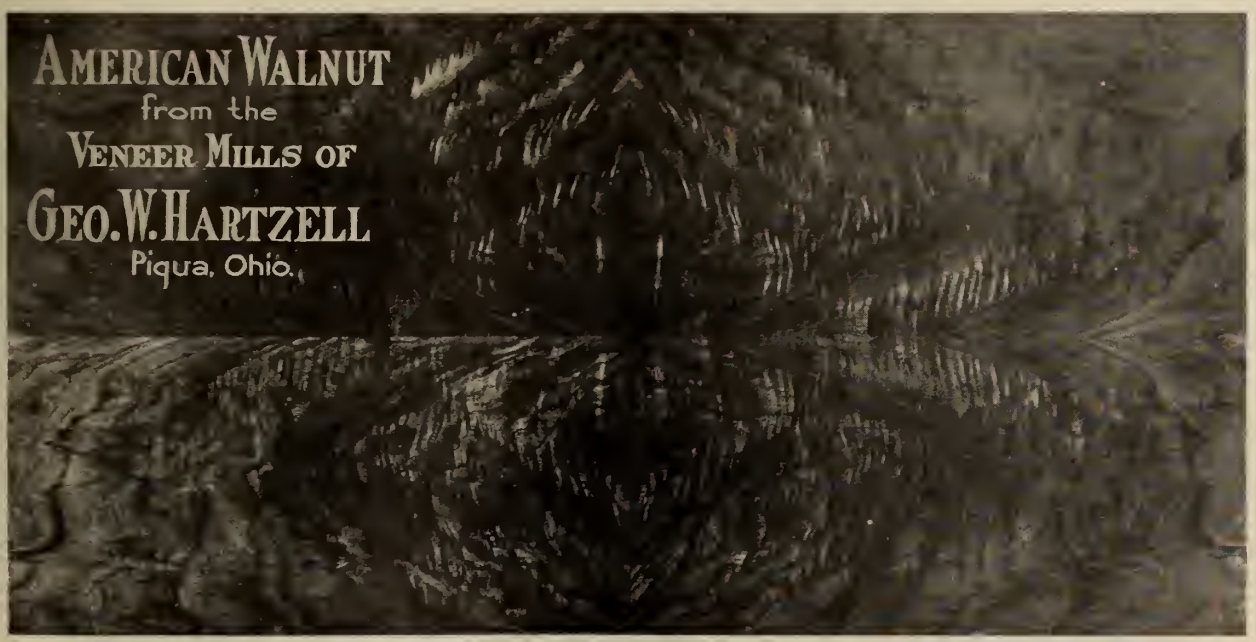
We rightfully claim your patronage because of "SERVICE and QUALITY," if there is any question in your mind about it

"Try Us and We Will Ship You the Convincer"

No Order too large, no Order too small to receive the close and careful attention it is our custom to give. That is a great part of our business, serving our customers.

"WRITE FOR SAMPLES AND QUOTATIONS"

Geo. W. Hartzell - Piqua, Ohio



The way it goes to our Customers

Manufactured of Appalachian Oak by Baker and Company, Allegan, Michigan.

~ The Two Essentials ~

Whether for use in the production of furniture of excellent design and taste, or for the finest of interior trim, manufacturers of high grade cabinet work find Appalachian Oak manufactured by the W. M. Ritter Lumber Company most desirable because it combines the two essentials—Quality and Economy.

The fine, subdued grain and uniform color of this oak makes it broadly adaptable to good design and it may be easily and beautifully finished.

Furthermore, it is mild in texture which permits proper seasoning and working with the least expenditure of time and energy and loss of material. This effects a saving in cost and assures cabinet work of unusual elegance and dependability.

Write for quotations on Our Appalachian Oak.

W. M. RITTER LUMBER COMPANY

General Offices — **COLUMBUS, OHIO**

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APPALACHIAN OAK

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE, LA.

Southern Office: MEMPHIS, TENN.
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MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

BEDNA YOUNG'S
SOUTHERN
HARDWOODS

The quality and saleability of your furniture depends primarily upon your selection of hardwoods, for without good material the finest craftsmen are helpless. Play safe—always choose Bedna Young's hardwoods. Fine, figured, quartered oak a specialty.

BEDNA YOUNG LUMBER CO.

Jackson, Tennessee

From Old Kentucky

The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

Ash, Oak, Gum, Poplar, Hickory, Walnut, Chestnut, Beech, Maple, Elm, Sycamore, Cottonwood. Quotations promptly.

J. V. STIMSON & CO.
Owensboro - Kentucky
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HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of
C. W. PETERS
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J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

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Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

56 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar both plain and quarter sawed, Sound Wormy Chestnut, Cypress and Ash.

"Wire collect for prices or other information. Time is Money, delays pay no dividend."

La Tuque Turpentine

Made by an improved laboratory process from Canadian woods.

An excellent thinner for paste, colors, enamels, stains, paints and varnishes.

La Tuque Turpentine contains no free rosin.

The quality is there
The price is right

Write us for particulars

BROWN CORPORATION
56 St. Peter St., QUEBEC, P.Q.

Do You use

BASSWOOD?

Panels made from fresh cut logs are of the finest quality, and can only be made during the winter. We have new logs arriving daily. Look up your stock and order Now, so you will be sure to have the Very Best in Basswood.

AMERICAN PLYWOOD CORPORATION
New London, Wisconsin, U.S.A.

"Better Use Birch"

The Economy of Birch

Birch is the most economical of all cabinet woods. Comparing favorably with the most costly imported products, it is far below them in price. Its uses are endless, and but little is wasted in working.

Birch is marvelously figured and takes a vast range of finishes. Used in furniture it represents the greatest value offered trade and public. Its strength also brings it into demand as framework for upholstered lines.

Houses are being built with floors, doors and trim of Birch; they are being completely furnished in Birch—sometimes because of its price, sometimes regardless of price, but ALWAYS for its inherent quality and beauty.

A chair in Canadian Birch from the shops of John C. Mundell & Co. Ltd., Elora, Ont.

Anderson, Shreiner & Mawson

Colonial Bldg., 13 King St. West, Toronto

HARDWOOD LUMBER

Mills at South River Ontario

THIS MONTH

Buy Your Stock of

Basswood Panels

FROM

The Pembroke Plywood Company

PEMBROKE :: ONTARIO

BASSWOOD CROSSBANDING
BASSWOOD DRAWER BOTTOM STOCK
PANELS IN NATIVE WOODS

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co.
LIMITED
Orillia, Ontario

H.B. P.K. REGISTERED TRADE MARK

HALL BROS. LIMITED
LUMBER & TIMBER
TORONTO CANADA

BIRCH
MAPLE
ELM
BASSWOOD
PINE
SPRUCE
HEMLOCK

Better Lumber
Better Service——

Canadian Hardwoods—Basswood, Birch, Maple and Elm—are our specialties. We offer them in a superior quality, liberally graded and remarkably free from defects. All our lumber is carefully manufactured, and inspected at loading point.

Unusually complete facilities including mills and sorting yards in connection permit prompt shipment being made in any quantity. Mixed cars at no additional cost. You get what you want as you want it.

"Lumber at First Cost"

HALL BROS., LIMITED

300 CROWN OFFICE BLDG., TORONTO MAIN 2806

Canadian Hardwoods

The PEDWELL HARDWOOD LUMBER CO.

Office and Yard: Foot of Spadina Ave. - - TORONTO

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

TENNESSEE SCENTED CEDAR

1 in.—26,200
1¼ in.— 1,800

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	48,000	5,000	112,000	200,000
1¼ in.	19,000	.....	1,000	11,000
1½ in.	6,200	.....	28,000	82,000
2 in.	7,000	.....	25,000	63,000
2½ in.	4,500	.....	4,300	3,000
3 in.	21,700	.....	6,500	4,000
4 in.	4,300	.....	900	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,600	.....	3,000	.....
1 in.	136,000	7,000	196,000	44,000
1¼ in.	26,000	800	27,000	28,000
1½ in.	24,700	2,600	86,000	42,000
2 in.	11,000	.....	22,000	40,000
2½ in.	3,000	.....	.....	.....
3 in.	1,300	.....	.....	.....
4 in.	1,500	.....	300	.....

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	70,000	202,000	1,800	9,000
⅝ in.	.....	74,000	21,600	2,000
1 in.	90,000	6,000	.....	50,000
1¼ in.	36,000	54,000	5,000	1,100
1½ in.	40,000	47,200	4,000	500
2 in.	44,000	121,000	26,000	5,000
2¼ in.	1,500	1,400	.....	.....
2½ in.	94,100	33,000	.....	.....
3 in.	5,800	19,000	7,000	12,000
4 in.	2,600	4,600	.....	.....

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	.....	7,000	15,900	3,000
¾ in.	108,000	237,000	28,000	29,000
1 in.	63,000	25,000	16,200	78,000
1¼ in.	55,000	2,600	.....	.....
1½ in.	30,000	33,000	.....	.....
2 in.	26,000	54,000	7,000	6,000
2¼ in.	3,200	3,200	.....	.....
2½ in.	117,000	45,000	2,000	1,800
3 in.	10,000	41,000	2,400	600
3½ in.	4,500	5,000	.....	.....
4 in.	26,000	17,800	.....	.....

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,700	.....	5,700	500
1 in.	6,200	5,400	9,000	1,400
1¼ in.	5,900	.....	900	.....
1½ in.	.....	.....	.....	.....
2 in.	.....	.....	7,400	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	.....	.....	.....
¾ in.	3,900	.....	6,300	3,000
⅝ in.	2,800	.....	700	800
1 in.	44,000	5,300	41,000	1,700
1¼ in.	13,000	14,300	28,000	1,800
1½ in.	7,000	500	2,500	.....
2 in.	5,500	.....	23,000	5,700
2½ in.	1,000	.....	.....	.....
3 in.	300	.....	200	.....
4 in.	600	.....	700	.....

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	.....	2,500	.....	.....
1¼ in.	1,400	14,000	2,000	9,000
1½ in.	.....	1,800	11,200	3,000
2 in.	5,100	2,400	.....	4,700
3 in.	.....	.....	.....	300

QUARTERED SAP GUM

	1 & 2	No. 1C	No. 2C
4/4	.....	1,800	.....
5/4	.....	14,000	.....
8/4	.....	34,000	20,800	300
10/4	.....	8,000	.....	.....
12/4	.....	300	.....	300

POPLAR

	1 & 2 18" & up	1 & 2	No. 1 Com.	Bright Saps
¾ in.	.....	.....	600	600
⅝ in.	1,500	43,000	100	6,900
1 in.	1,100	75,000	89,000	65,800
1¼ in.	2,300	5,000	63,000	.....
1½ in.	6,300	12,000	20,000	35,000
2 in.	.....	14,300	5,000	18,800
2½ in.	.....	4,000	400	13,800
3 in.	.....	2,000	.....	21,000
4 in.	.....	1,400	3,500	8,200

Also Large Stocks of Ash, Basswood, Beech, Birch, Hard and Soft Maple.

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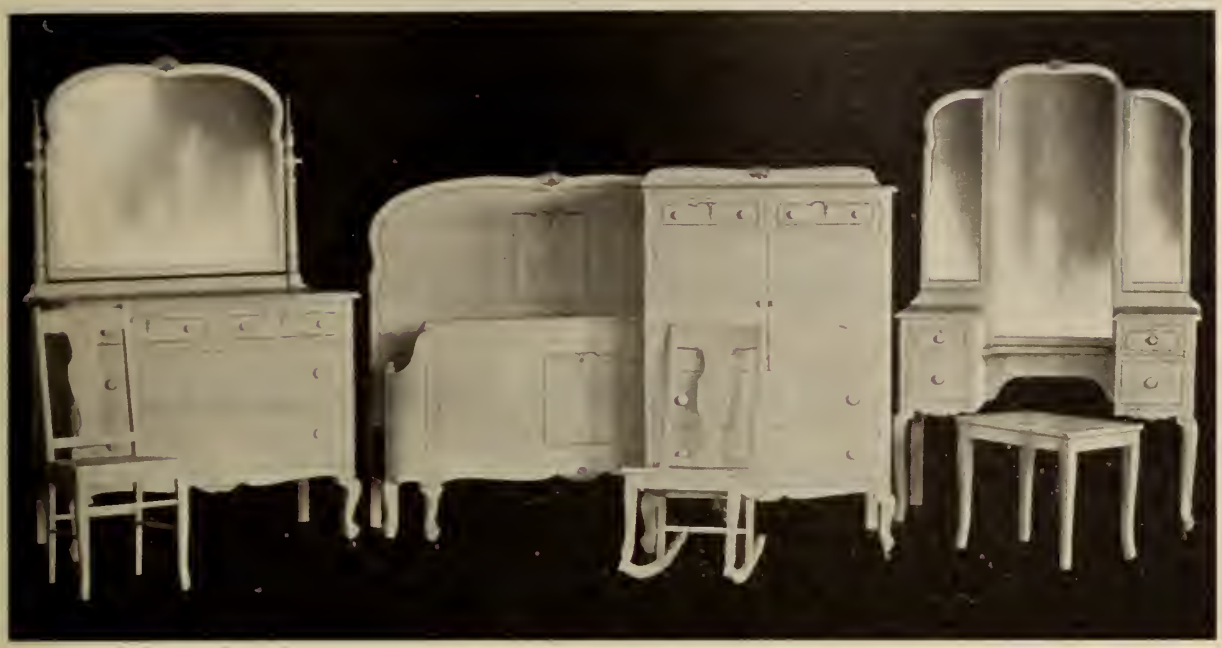

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We would appreciate an opportunity of furnishing a portion of your lumber requirements.

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Quartered Red Oak

Plain White Oak
Quartered White Oak

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A Permanent Lumber Service

AFTER several years of inactivity we are now cutting on our modern fully equipped mills at Manistique and Little Lake, Upper Michigan. The timber behind these mills was purchased many years ago by the Stack interests from the then "unlimited" supply. Its quality, particularly the maple and birch, is the envy of northern mill men among whom this tract is famous.

This timber will run the mills to full capacity for fifteen to twenty years. The 40,000,000 feet annual cut will run:

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2,500,000 ft. beech annually
2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually

the balace in Spruce and Tamarack.

Our exceptional service, grades, and manufacture will be maintained. "Low freight rate shipments by water to Toronto, Montreal, Owen Sound, Port Arthur, and other Great Lakes and St. Lawrence River Ports. Conveniently located also for rail shipments to inland points by the C.P.R. or Soo line."

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ESCANABA MICHIGAN

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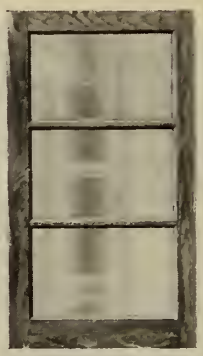
TO BE ABLE TO GET YOUR CUPBOARDS DOORS QUICKLY

SIZES IN STOCK Width		Height	NET PRICE
1-0	x	1-6	$1.25
1-0	x	2-0	1.25
1-0	x	4-6	1.69
1-1	x	4-6	1.65
1-1	x	5-0	1.85
1-2	x	4-6	1.75
1-2	x	5-0	2.00
1-4	x	1-8	1.25
1-4	x	2-0	1.25
1-4	x	2-6	1.25
1-4	x	3-0	1.35
1-4	x	3-6	1.55
1-6	x	2-0	1.25
1-6	x	2-6	1.30
1-6	x	3-0	1.45
1-6	x	3-6	1.80
1-6	x	4-0	1.90
1-8	x	2-0	1.25
1-8	x	2-6	1.40
1-8	x	3-0	1.65
1-8	x	3-6	1.85
1-8	x	4-0	2.10
2-0	x	2-0	1.35
2-0	x	2-6	1.70
2-0	x	3-0	1.90
2-0	x	3-6	2.20
2-0	x	4-0	2.50
2-0	x	4-6	2.85
2-0	x	5-0	3.15

No. 20

Sizes in Stock and Prices Shown at Left



No. 23
No Glass Included

SIZES IN STOCK			PRICE
1-4	x	3-0	$1.30
1-6	x	3-0	1.45
1-8	x	3-0	1.60
1-10	x	3-0	1.75
2-0	x	3-0	1.85

No. 21
Medicine Cabinet Doors
Beads Fitted
Sizes Below

SIZES IN STOCK			PRICE
1-0	x	1-8	$1.25
1-0	x	2-0	1.25
1-1½	x	2-0	1.25
1-4	x	1-8	1.25
1-6	x	2-0	1.25
1-8	x	2-0	1.25

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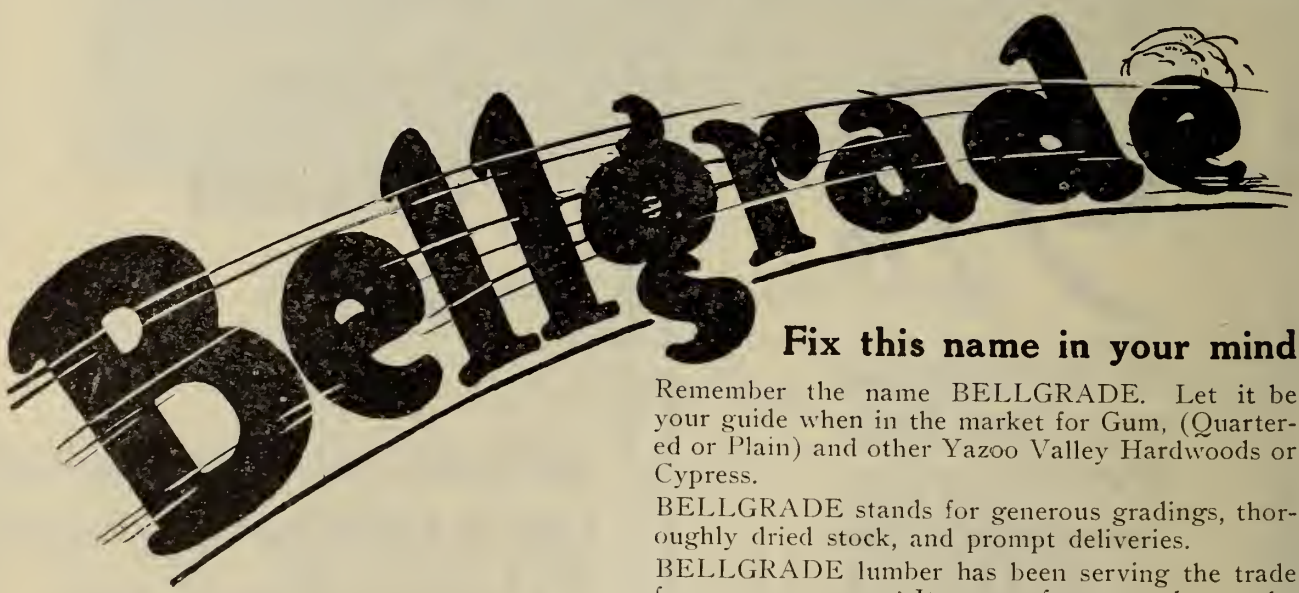

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The Furniture Industry Views the Future with Optimism

Whatever may have been the condition of the furniture industry in the past year, the prospects for the present season are very promising according to the Furniture Manufacturers' Association. In the address of Mr. William Krug, the retiring president, this conclusion is arrived at after a very careful analysis of the factors that bear on the situation. He stated that "we may look forward with a considerable degree of confidence to an increased amount of prosperity during the year 1923." He explains that there is at present an optimistic feeling throughout the trade—much more than there was last year—and in consequence a tendency to view the outlook hopefully. This is very encouraging, even though there is the possibility that prices will have to stiffen somewhat if the manufacturers are to make reasonable profits. Some firms have probably accepted losses but at least they have been compensated by helping to restore business to a pitch very near normal. This year they can reasonably expect to profit a little by their operations—an expectation that seems probable of realization if trade conditions develop as anticipated.

That the furniture manufacturers are now better able to take care of their business is further indicated in Mr. Krug's address. "During the past year," he states, "a great many economies have been effected by improving factory conditions, and our factories were never so well equipped as they are now to turn out well-made goods, in fact, equal, if not superior, to anything produced elsewhere." It is gratifying to know that our Canadian furniture makers are realizing the necessity of keeping abreast of the times in their methods and equipment. Only a small minority have in the past deliberately turned a deaf ear to the call of progress and even those are now awakened to the knowledge that theirs is a losing game unless they are prepared to modernize their facilities.

In this connection it is worth special mention that the furniture manufacturers are very keenly interested in improving their dry kiln practice. Through the research work and personal investigation conducted by Mr. A. R. Duff, of the University of Toronto, several plants have been able to improve their kilns or erect new ones on up-to-date lines. In many factories the kiln drying has been anything but satisfactory. In some cases it is the fault of the kilns, in others the fault of the operator. In many instances the principles that govern kiln drying and the theory back of the practice are not understood. Mr. Duff states that this condition of affairs could be remedied if the handling of lumber was governed by certain rules and regulations which it is possible to lay down. He intimates, however, that in order to carry out these regulations in their entirety, it will be necessary to have regularly employed young men with the necessary education to see that all matters relating to the kiln drying of lumber and air conditions are in accordance with best practice.

In one other matter, the furniture manufacturers are showing themselves disposed to improve their ways—and that is cost keeping. Mr. Ferguson, of the cost accounting department of the F.M.A., states that the industry has been somewhat lacking in the spirit of scientific investigation and slow to call to aid modern methods for cost reduction. "It is a pleasure," he adds, however, "to note that there is now abroad a strong desire to follow the best engineering principles as applied to our industry, and if this spirit is fostered we can predict with certainty that during the next five years great strides will be made."

Thus it will be evident that to the importance of all matters pertaining to improved production methods and plant procedure the furniture manufacturers are thoroughly alive. They are seeking the best knowledge regarding these matters and are adapting to their own conditions the best that the modern science of management and production has shown. For this reason we can confidently look forward to a great improvement in the furniture industry and particularly to a good year's business in 1923. Mr. Ferguson substantiates Mr. Krug when he states: "There is now evidence of comparative stability. The notable feature of the recent months has been the growing feeling of betterment, a feeling that, notwithstanding uncertainties, we can go forward with confidence to a year's business, the results of which will be more satisfactory than we have experienced for some time."

Furniture Makers See Promising Outlook

At the Annual Meeting of the Furniture Manufacturers' Association the Prospects for the Year Are Forecasted—Need for Cost Study —Kiln Drying Practice is Improving

The past year has been a most difficult one for all of us. We had to face declining values and in the early months of the year, a declining market and sales fell away. However, I am pleased to say that August showed a sharp recovery, and this improvement was continued through the months of September, October and November, and the outlook for 1923 is very promising."

Thus was the situation in the furniture industry summarized in the address of Mr. William Krug, retiring president of the Furniture Manufacturers' Association, at the annual meeting of the organization in Toronto last month. Unfortunately, illness prevented Mr. Krug's appearance in person so that his address was read by the secretary. So important are the points which it brings out that it is published here in full:

"You have information from Mr. Ferguson of the cost accounting department showing how many of the commodities entering into the manufacture of furniture have advanced in price, especially mirror plate, and there are indications that we will experience stiffening prices in many of the articles we have to buy. Reports from the United States go to show that their prices there are in many classes of goods higher than our own, and the industry there is reported to be very near the 1919 peak level, having shown a remarkable degree of improvement during the last six months; in fact the furniture industry has recovered much more rapidly than was generally supposed possible. At the present time the demand for furniture in the States has only been exceeded on two occasions; namely, in the autumn of 1918 and in the after-war boom of 1919 and 1920.

"Past experience has gone to show that in Canada we get the same conditions as on the other side, but generally about six months later, and considering the large amount of building that has taken place I think we may look forward with a considerable degree of confidence to an increased amount of prosperity during the year 1923. Moreover, there is a much more optimistic feeling throughout the trade now than there was last year. Unfortunately the prices we are getting for our goods are too low to make manufacturing profitable, and if we are going to be faced with increased costs of materials, it is certain that our selling prices will have to be advanced. I think that very few of us made any real money during 1922, and while it has been necessary for us to take our losses, this state of affairs cannot continue indefinitely.

Kiln Practice Improved

"There have been practically no reductions in the wages in our factories, nor do I think that this is desirable or indeed practicable. During the past year a great deal of economies have been effected by improving factory conditions in Canada, and our factories were never so well equipped as they are now to turn out well-made goods, in fact, equal if not superior, to anything produced elsewhere.

"In the past many of us have had trouble with our kilns, and the methods of drying lumber have not been as satisfactory as could be wished for. By arrangement with the Research Committee of Engineering of the University of Toronto, this Association has been able to secure the services of Mr. A. R. Duff, mechanical engineer, to conduct research work in the Canadian factories, and by reason of this several plants have been able to improve their kilns or to erect new ones, constructed on what is considered to be the most up-to-date methods known. This work is being continued throughout the different factories whose practical co-operation made it possible for us to take advantage of the opportunity that presented itself to secure this service.

"Our cost accounting department has continued to give very effective service, not only as regards costing but also in regard to general information in all matters, appertaining to materials and factory problems.

"The activities of the credit section have continued and owing to the large number of failures, the work in connection with it has been very heavy.

"The secretarial work has been carried on, and the services rendered to members is constantly increasing. One of the most recent additions has been the exchanging of information regarding pool cars. Members were advised when there was space to be filled in cars, and firms having enclosures were put in touch with firms who had room in cars.

"The general interchange of information in regard to machines for sale and wanted, is being continued, and the Association is always giving out general information of all kinds, both to furniture manufacturers and retailers; in fact, it is now a recognized bureau for dissemination of information regarding furniture, all over Canada.

"During the year there have been five general meetings of the Association, in addition to sectional meetings. The attendance at these meetings has been very gratifying. Looking forward, members of several sections would do well to exercise caution in accepting orders too far ahead, otherwise they may find themselves burdened with orders which will show little or no profit.

"All we have to do is to watch our steps from now on; use the services of the Association; see to it that our cost figures are checked up by the cost accounting department and stand firm with prices that will yield a living profit, and if we do this we will put our industry in the position it should occupy as one of the leading industries of this Dominion.

"In conclusion, I wish to state that it has been a source of great gratification to me that this Association has been able to go through a very trying year without any serious impairment of its strength and undoubtedly if it had not been for this Association and our united efforts, we furniture manufacturers would have found ourselves in a very much worse condition than we are in at present.

Status of Orders and Shipments

Mr. Ferguson then presented the report of the cost accounting department for 1922, as follows:

"From the records of 1922, it may be said the

volume of business transacted by the furniture industry during that year was "fair." Taking as a basis the figures of those members who submit regularly their monthly figures, the value of shipments was about 2% less than in 1921. As the selling prices were lower than during the previous year, the actual number of pieces shipped must necessarily have been greater. The proportion of shipments to normal for the year 1921 was 66 while for the year 1922 it was 74.

"The following table gives the standing of orders, shipments and unfilled orders for each month.

	Orders	Shipments	Unfilled 1922	Unfilled 1921
January	83.6	58	25.5	22.8
February	79	64	29	28.8
March	77	74.8	29.7	27.3
April	67	71	27.4	25
May	93	80	30.2	28
June	85	77	31.8	26
July	51	66	26	22.5
August	84	75	28	21
September	100	77	35	27
October	106	91.5	39	26
November	88	81.5	39.6	28.5
December	51	76.6	29.8	23.5

"The general level of prices continued the upward trend which became evident towards the end of 1921. Bradstreet's index number on January 1, 1921, stood at 11.3725 and rose throughout the year to 13.7011 on January 1, 1923. This represents a rise of 20.4% for the year, or 29% over the low point of June 1921. It now stands 34.3% lower than the point of February 1920, and 57.3% over August 1914.

"The Labor Department index number declined during most of the year but began to rise during the closing months. In January 1922 it stood at 227.7, declining to 219.8 in October. In December it had risen to 223, an advance of 62% over 1914.

"At the end of the year our Commodity figures showed the following increases over 1914: Lumber, 97.4%; glue, 13.5%; hardware, 96.0%; finishing, 112.5%; glass, 20.0%; mirrors, 131.0%; packing, 69.0%; upholstering, 88.0%.

"By weighing each group in proportion to its importance, it is observed that materials used in our industry are 84% over the 1914 level.

"The most serious increase of the year was that of mirrors which advanced 26%. Lumber was gradually advancing during the fall months. The general hardwood index based on 49 items of 15 hardwood species showed an advance of 17% during the year. Steel goods and textiles also advanced considerably.

"The wage rate of skilled labor remains about the same, as shown by the reports on wage conditions issued in March and November. Most factories report a gradual increase in labor efficiency. Wages register an advance over 1914 of from 80% to 90%.

"Items of cost which come under the heading of expense show very little change, a curtailment of one section being offset by greater expenditures or losses in other sections.

Cost Study Needed

"In former reports we have emphasized the need for thorough examination of all the elements of cost. In the field of internal economy there is much to be done, calling for the best that is in us. In our industry we have somewhat lacked the spirit of scientific investigation and have been slow to call to our aid modern methods for cost reduction. It is a pleasure to note that there is now abroad a strong desire to follow the best engineering principles as applied to our industry, and if this spirit is fostered we can predict with certainty that during the next five years great strides will be made, of which we shall all be proud.

"While the past has not been without its disappointments and reactions, it has also given us encouragement and there is now evidence of comparative stability. The notable feature of the recent months has been the growing feeling of betterment,

Officials of the Furniture Manufacturers' Association

J. A. Minchner, president

Wm. Krug, past-president

Wm. Cawkell, secretary

a feeling that notwithstanding the uncertainties of 1923 we can go forward with confidence to a year's business, the result of which will be more satisfactory than we have experienced for some time. At the present level we estimate that 1923 will yield 15% more business than we had in 1922 and the net results will largely depend on ourselves, on the extent to which we co-operate, and on the amount of stability we show."

Accident Prevention

The chairman then called upon Mr. V. L. Mummery, of the Industrial Accident Prevention Associations, to say a few words relative to the prevention of accidents. He first gave figures covering accidents in the furniture industry, and then made comments as follows:

"The greater cost of workmen's compensation is incurred not through accidents in the true sense of the word, but these happenings are the result of definite causes; and with knowledge of these causes, preventive measures can be taken that will make for material reduction.

"Might I refer to one other important factor in accident prevention, that is, the human element. I am firmly convinced that more accidents, using the common meaning of this word, are reported through this contributing cause than from all other causes combined. To illustrate my point, accidents rarely occur to skilled employes, while the contrary is noted with unskilled labor.

"So far, I have dealt with statistics only, but the more important part of our work is prevention and not compilation of historical records.

"Therefore, in reviewing statistics presented, preventive measures in sequence of importance are—

"1. Supervision—supervision that enters into the hiring of suitable employees that will correct careless habits and unsafe practices, that will give proper warning of dangers peculiar to job and shop; and then not till then, enter into the only solution for the employer.

"2. Adequate and efficient protection of known physical or mechanical hazards; and might I say that with the large number of practical guards now on the market, these hazards can be made almost foolproof.

"3. Education—Marked progress can never be made in accident prevention unless the interest of employees is stimulated; and for this purpose, our Association is now mailing bulletins for posting in shops. I earnestly recommend that these be used for the purpose intended."

Proper Kiln Operation

"The chairman then asked Mr. Duff if he would say a few words in regard to the kiln-drying of lumber, and in reply Mr. Duff stated that he was quite prepared to answer any questions that the members present wished to ask him, and in response to questions from members, he outlined an ideal in furniture manufacturing that should be entirely attainable.

Although it has often been stated that from a purely theoretical point of view it is entirely possible to avoid all the usual troubles that occur in furniture factories, it was only after a year and a half of work and hard study on the subject that he felt himself in a position to state positively that he could assure them that this is also practically possible. Checking, splitting, warping, the opening up of glue joints, and all of the troubles incidental to atmospheric conditions are entirely avoidable.

Mr. Duff went on to say that the equilibrium moisture content, or the eventual moisture content, is the moisture that lumber would have it it were left indefinitely in air of given temperature and humidity. If kilns are suitable and properly operated, the lumber should come from the kiln uniformly dried and free from case hardening. The lumber which comes from a kiln should be stored in a place where the air conditions are such that the lumber will not pick up moisture. The air of the different departments in a factory should be kept at such a temperature that this lumber will neither pick up nor give off moisture, right through to the showroom.

If throughout the entire factory there is no absorption or loss of moisture, then there will be no expansion or contraction, and without expansion or contraction there cannot be checking, splitting, warping or any movement in the wood.

In going around he has found that the air conditions in most factories are very uneven, so that there is every reason to expect expansion and contraction with resulting checking, etc. If the handling of lumber was governed by certain rules and regulations, which it is possible to lay down, this condition of affairs could be remedied, but in order to carry out such suggestions and regulations in their entirety, it will be necessary to have regularly employed in the factories, young men with the necessary education (not necessarily university education) whose duty it would be to see that all matters relating to the kiln-drying of lumber and air conditions in the factory, were in accordance with the lines laid down by the dry kiln specialist, who would visit the factory from time to time.

The meeting then proceeded with the election of officers for 1923, and the following were unanimously elected: President, J. A. Minchner; vice-president, P. R. Hilborn; executive committee and advisory board: W. J. Anderson, J. H. Baetz, W. G. Durst, G. A. Gruetzner, J. S. Knechtel, H. Krug, L. Malcolm, D .E. Macintyre, J. J. Spiesz, H. M. Snyder, R. J. Ball, J. E. Campbell, W. E. Dolan, W. G. Hay, Wm. Krug, Andrew Malcolm, F. E. Mason, J. R. Shaw, F. W. Trebell and D. M. Wright.

Inlays for Furniture Work

419 Victoria Ave.,
Niagara Falls, Ont.,
February 1, 1923

Editor, "Canadian Woodworker,"

Kindly tell me where I can procure inlays made up in strips ready for inlaying, in satinwood, and other woods such as are used for Sheraton work. I will appreciate any information you can give me.

Yours truly,
John Spence.

You will find that the following firms will be able to meet your requirements in connection with Sheraton inlays: J. Bernard Co., 422 East 53rd St., New York; Geo. H. Jones, 212 East 37th St., New York, and Dover Manufacturing Co., Canoe Place, Woodhaven, N. Y.

A man may have the greatest desire in the world to do good work, but unless he has the knowledge and the skill and good materials, his task is impossible.

A Discussion of Planers and Surfacers

Double Surfacer Seems to be Going Out of Vogue—Sectional Rolls and Chipbreakers Are a Good Investment—Power Feed Buzz Planer is Much in Favor—Square Heads are Being Supplanted

By W. ALEXANDER

One machine that is not very often found in cabinet factories, particularly furniture factories, these days is the double surfacer. There was a time not so long ago when nearly every furniture factory had one, but now their preference seems to be to face up the stock with a power feed buzz planer and then dress it down to a thickness with a single surfacer.

It seems to be possible to get stock more accurately thicknessed in that way. The double surfacer may have its usefulness in many lines of work, in fact undoubtedly has, because many trunk and box factories employ them almost exclusively. Of course in box work we can understand they serve a very useful purpose. The first consideration in this line of work is production, and the double surfacer helps this along wonderfully by dressing stock to a thickness on one trip through the planer. Of course, the lumber for box work does not have to be accurately thicknessed as material that is to be used for furniture or cabinet work.

Where stock is put through in large quantities as in a furniture factory, with all parts machined from drawings or rods for an entire job it is easy to understand how a very slight variation in thickness of some or all of the parts, caused by the surfacing, would work havoc when the final assembling operation arrived. It would also cause a great deal of trouble where the stock was to be veneered. A slight variation, or a wind in any of the pieces, would make the life of the sanderman forced to clean up the stock on its removal from the press a very unhappy one.

By facing all stock on the power feed buzz planer it is taken out of wind, and then when it is dressed down to a thickness it is accurate, if the surfacer is a good one, and we are assuming that it is because no firm that expects to stay in business should have anything else but a good one.

Improvements in Single Surfacers

In single surfacers there have been a good many changes in recent years. More ball bearing surfacers are being used all the time, and they certainly seem to be standing up to all that is asked of them while doing a quality of work that cannot be criticised. Several owners of these machines in Toronto were asked to demonstrate them for the writer's benefit recently. Every one of them was quite enthusiastic about the work the machines were doing. And after all, practical use is what counts with any machine. The ball bearings permit the cylinder speed to be increased to about fifty-five hundred r.p.m., and this fact together with the fact that round cylinders carrying four knives are in almost universal use where good work is being done means that the rate of feed can be increased considerably without the quality of the work suffering.

The whole solution of good planer work, as has been argued many times, is in increasing the number of knife marks per inch. The increased cutter head speed together with the fact that four knives are cutting gives a combination that permits a beautiful quality of work to be produced at good rates of speed.

Of course, to have four knives cutting will not get you anywhere unless they are all cutting in the same circle. This is achieved by having grinders to grind the knives right in their place on the machine. Some of these grinders are operated by belt and some by electricity from an ordinary light socket. When the knives are set in place in the head by means of the knife setting gauges furnished for this purpose and then trued up or ground with one of the above mentioned grinders a perfect job is obtained.

Advantages of Sectional Rolls and Chipbreakers

Surfacers with sectional rolls and chipbreakers are gaining in favor all the time. Most firms buying a new planer find that there are times when it would pay them to have this equipment, and they usually decide that it pays them to have it. There is nothing quite so aggravating to a planer operator as to have to stand and feed narrow strips into a planer one after the other, thinking at the same time how much quicker he could do the job if he only had sectional rolls and chipbreaker on it. But perhaps it is the foreman it worries most, particularly if he is being pressed by the office. Sectional rolls and chipbreaker usually will quickly pay for themselves, and should be a good investment for any plant.

Some manufacturers may dismiss the subject when they are buying by saying they have no narrow stock to plane, but this is usually a fallacy as we all have some narrow stock to plane now-a-days. The proportion of the wide lumber received by the average plant in these times is not very great, so that it would almost seem a good plan to make sectional rolls and chipbreakers standard equipment. Sometimes in planing mills this equipment is not absolutely necessary, but even here they find that the solid roll is too slow and compromise by putting in a divided roll, which, while it has not the advantages of the sectional rolls, just doubles the capacity of the machine over and above the solid roll.

Power Feed Buzz Planer is Important

It is doubtful if the power feed buzz planer, which was referred to briefly before in this article, receives the consideration it should by woodworkers. The facing-off of corestock and taking the twists out of it, as well as other work which does not call for veneering but which calls for similar treatment in other respects, is an important operation. This operation falls to the lot of the power feed buzz planer. It has been my observation that a great many users of this machine pay more attention to the purely mechanical function of the power feed rather than to the ability of the machine to produce properly faced work.

To put it a little clearer: If you will examine some of these power feed attachments sold for buzz

planers you will note that while they will undoubtedly feed the stock through, there is a strong possibility of the twists remaining in the boards. One that I have in mind as I write has the feed roll directly behind the cutter head. That is to say, the operator must feed the board past the cutting cylinder before it is gripped by the feed rolls. The attachment would, therefore, be more aptly termed a feed-out attachment than a feed attachment.

It may be argued that an attachment of this kind, taking hold of the stock immediately after it leaves the cutter and holding it flat against the outfeed table until the cutter has finished its work will successfully take out the twists, but I have seen attachments that I thought more of.

The kind of power feed buzz planer that I like is the one that has the feeding attachment the full length of the machine. Instead of rolls, the feed is applied much on the principle of an endless bed sander. In place of the rubber discs used on the sander, the feed apparatus on the buzz planer consists of metal fingers, each with an individual spring, which holds the stock in perfect contact with the bed of the machine and the cutters while it passes through.

There are several other very effective power-faced attachments, of course. One of these that I am acquainted with has a fairly long feed, and, while it does not extend the entire length of the bed, it extends a sufficient distance each side of the cutter to be effective.

The proper facing of the stock has a great deal to do with the core-stock on which the veneer is to be laid, so that intending purchasers of power feed buzz planers are advised to look into the matter carefully. Try, if possible, to see some of the competing machines in operation, and question the operators. The operators can usually give you more accurate information than the owner of the plant.

Double Surfacer for Cleaning Stock

Getting back to the double surfacer it may be said that there is one job in the furniture factory for which it is sometimes used, and that is for cleaning off the lumber as it enters the machine room from the kiln so the operators in the break-out department will be able to distinguish the figure and color of the wood, thus enabling them to make a much better job of the matching up process than were they called on to match it up in the rough. But even on this job the single surfacer has found some popularity, the reason being that there is never too much to spare on lumber and if the stock is to finish thirteen-sixteenths, as most furniture stock does, care must be exercised to keep it from getting below this thickness. This is very liable to happen if the stock is put through a double surfacer to clean it off for matching purposes and then put through the power feed buzz planer and single surfacer afterwards in the ordinary way.

Whether it is that the double surfacer with modern features is the proper machine for dressing corestock and is not used on account of manufacturers not being educated to its advantages I cannot say, but I do not think this is the case because most men buying machines now-a-days spend a few dollars taking a trip around the country to investigate before definitely buying and very few men in the cabinet trades are buying double surfacers.

There are still a few plants operating old type surfacers with two knife square heads, but they are among the smaller fellows where capacity is not such an important factor. Gradually square knife planers have been supplanted with the more modern type carrying round cylinders with four high speed knives, and I predict that in cabinet plants the square head planer will soon be a thing of the past.

Important Contribution to Cost Literature

It is safe to say that no phase of business to-day is receiving more attention than the costs of production and the way in which cost data may be used in the determination of business policy. The importance of these questions is evidenced in the great attention given them by the business press. The woodworking industry is no less interested on this subject of costs that other lines of business and the articles that have appeared in the "Canadian Woodworker" on cost matters have consequently been widely read and carefully studied.

In connection with costs a splendid literature is being built up, important elements of which are the year books issued by the National Association of Cost Accountants, New York, with which is affiliated the Canadian Society of Cost Accountants. These organizations act as clearing houses for the collection and dissemination of cost information and in a large way are spreading the gospel of business control through accurate cost data. The National Association has just issued its 1922 Year Book of 452 pages which contains a complete report of the proceedings of the Third International Cost Conference held last fall. The book is replete with practical information of great value to cost men, managers, industrial engineers, and public accountants. The material in the Year Book was presented by the leading cost accountants on the continent and deals with some of the most important cost and managerial problems confronting business men. Some of these problems are:—

1. Should inventories be valued at actual cost or replacement cost.
2. Should material be charged at cost or market value?
3. How should selling and administrative costs be required, and the high cost of distribution reduced?
4. How can standards of various kinds be established?
5. How should budgets be constructed and used?
6. How may costs be used by management in formulating and carrying our business policies?
7. How can the full co-operation of workers, employers and managers be secured through a wider understanding of industrial facts, as opposed to the misleading propaganda of radical interests?

On these and other cost questions there is such a fund of useful data that the Year Book will make a valuable addition to any business library. It is full of information which may be put to practical use in any business. It shows how costs are obtained and used. If business is to hold a high position, we must recognize the value of costs not only as the basis of fair prices but as the guiding factors in the control of every department and division of industry. In pointing the way, this volume is a real contribution to the literature of business. To non-members of the association the price of the Year Book is $3.00.

What Determines a Man's Earning Power?

Should Time Worked or Amount Produced be Governing Factor?—Growing Sentiment in Favor of Incentive or Payment by Performance Plan of Remuneration

By L. R. WRIGHT*

It is often said that straws indicate the way the wind is blowing; similarly, if the trend of events can be forecast by apparently unconnected incidents that have occurred here and there, it would look as if labor, as represented by the great body of workmen and by various unions, is gradualy swinging over in favor of some form of wage payment by which the amount produced is the basis for the amount paid. This may be called piece work, inventive rates or payment by performance, but the fact remains that this method of paying for labor is gradually finding favor among the workmen themselves. Should this movement continue, the day may not be far distant when the workmen will insist that rates that are fair to themselves, as well as to their employers, be introduced into the majority of plants.

Heretofore the attitude of the unions has been against such a policy and no doubt this attitude is the result of the experience of many men who are now members of various trade organizations. Recently, an American railway labor organization decided in favor of having rates introduced into the shops of one important railway. This is only the beginning. As the fairness and reasonableness of paying for labor on this basis becomes more widely recognized, other similar organizations will reach the same decision and this movement will develop rapidly.

When one stops to think of it, the idea of paying a definite amount of money for an indefinite and varying amount of labor is not logical. When a person makes a purchase of any kind, whether it is food or clothing, land, lumber or other material a known and definite return is expected for the money expended. Not only is this befinite value or return expended. Not only is this definite value or return to see that the exact quantities or measure bought is delivered. If he isn't, various harsh names are often applied to him, and his business dwindles.

Output is Indefinite While Pay is the Same

Does the same analogy hold true in connection with the way labor is purchased in a large number or plants? It apparently does not. The employee is very often paid a definite amount of money per hour, day or week and in return delivers an indefinite and varying amount of labor. In stating that an indefinite amount of labor is returned for a fixed sum of money, the suggestion is not that the employee deliberately attempts to curtail his output but the reference is to the fact that the output per man varies practically day by day. This is known and recognized and cognizance is taken of it when the question of hourly rates is being considered.

There is also another phase to consider. The capacity or ability of each man differs. Some are able to produce more than others, yet on the basis of a fixed hourly rate the person whose output is average or above the average seldom receives more than those who are not producing as much. The average workman usually prides himself upon the fact that he is producing or can produce more than his neighbor yet he is receiving the same wage. If he is producing more he should receive a higher rate because he is worth more. Through the payment for labor on the basis of what is produced, each and every workman is paid all that he has earned—it may be ten, fifteen or even twenty-five per cent more than he formerly received. The result is that those who produce the most, are paid the most. Thus merit and ability receive full recognition.

In the past many employees have attempted to develop rates for paying for labor on the basis of production but usually their efforts did not meet with the success they anticipated. The reason was not far to seek as the rates put into effect were extremely inaccurate, and often unfair, because they were established upon a mass of guesswork and as a result did not bear any relation to what the operating times should have been. If, after they were put into effect, it was found that some of the men were earning big wages the rates were immediately reduced and if the first cut was not sufficient, the rates were made still lower. On the other hand, if the rates happened to be too low and the workmen had great difficulty in earning the amounts they had received when working for so much per hour, any attempt to have the rates increased were not as a rule received with favor. Under such conditions it is not to be wondered that the idea of "piece rates," as they are commonly known, rapidly passed into disrepute. There was too much guesswork and too much uncertainty attached to such a method to win enthusiasm and support from the workmen affected.

Payment by Performance

This has all changed, however. Take in woodworking, for instance. It is now possible to establish definitely and accurately the time in which a certain operation should be performed, based on the capacity of an average good workman, the equipment and facilities at hand and the one best way of doing the work. Such information provides the ideal basis for developing rates, and the rates so established are accurate and bear a definite relation to the time in which the operation should and could be performed, regardless of whether they are expressed in time or money. Under a plan of payment by performance developed upon such a foundation the workmen have nothing to fear and everything to gain, for they know that such rates are fair and that through them they will receive all that their ability and deligence entitles them to.

It is this assurance of rates that are not based on guesswork but that are accurate and fair, that is responsible for the fact that "incentive" or "piece rates" are not only being accepted but are actually being sought by an increasing number of employees as well as employers. It is essential, however, that all rates be developed upon an accurate and lasting foundation.

*Forest Products Engineering Co., Chicago.

How Should Refrigerators Be Crated?

Packing Recommendations that Offer a Reasonable Combination of Low Cost and High Efficiency—Association of Refrigerator Manufacturers Urge Try-out of the Specifications

At the meeting of the National Refrigerator Manufacturers' Association held in Chicago on January 17, 1923, the following resolution was passed: "Be it moved that this Association recommends that the manufacturers of refrigerators as an experiment pack their refrigerators in accordance with the tentative specifications submitted by the Freight Container Bureau of the American Railway Association in order that it may be determined whether or not such specifications meet the requirements of the manufacturers. Further, that each manufacturer, after he has analyzed the tentative specifications, write to the Bureau explaining and outlining any objections he may have, based on a try-out of the specifications under the conditions existing in his own plant."

The tentative specifications referred to in the above resolution were developed by the above mentioned Bureau after a study of the crating requirements of the refrigerator industry. These recommendations are intended to serve as a signboard showing the best road to those who desire to deliver their shipments to their customers in good condition and thereby avoid the expense, delay and dissatisfaction of customers, necessarily incident to the filing and collection of loss and damage claims. Since all refrigerator makers will be interested in the specifications they are printed herewith.

1. Definitions

(a) By **Refrigerator** is meant a box for keeping food or other articles cool, usually by means of ice.

(b) By **Crate** is meant a framework of lumber, partially or completely closed with sheathing, used as a container in transportation.

(c) By **Framework** is meant the pieces of lumber which, when nailed together, form the outline or edges of the crate.

(d) **Sheathing** is the material consisting of cross slats, etc., used to partially or completely cover the crate faces for the purpose of protecting the contents.

These paragraphs define those terms whose meaning might be in doubt in order that there can be no question as to their meaning as used in this specification.

2. Interior Packing and Preparation of Refrigerators for Crating

Paper wrapping: All finished surfaces must be protected with at least one thickness of paper weighing not less than 25 lb. per ream, 24" x 36"—480 sheets, as an outside wrapper. It is strongly recommended that the paper used should be treated with paraffin or wax and the treated side placed next to finished surfaces to afford better protection to those surfaces.

The purpose of covering the finished surfaces of refrigerators with paper is to protect the finish from dust, spatterings of oil or grease and moisture. The reason for specifying 25 pound paper is that investigation has brought out the fact that most shippers are using either the weight of paper specified or a heavier paper, and that a lighter weight paper would be unsuitable due to lack of substance and strength to resist abrasion and tearing. It is recommended that a kraft paper be used, one side of which is treated with wax or paraffin.

3. Material for Crates

(a) Lumber: The lumber used in the crate for frame members must be sound, cut to size and seasoned. The lumber used for sheathing must be sound and where used as a protection to finished surfaces, the side next to such finished surface must be free from bark.

The reason for the requirements that sound lumber be used is obvious. Lumber for frame members should be cut to size so that parts of the crate can be properly nailed together. Lumber should be seasoned (air dried) as the results of many tests have shown that if the lumber of which crates are constructed dries out materially after being nailed together, the strength of the crate is considerably weakened.

The sheathing should be free from bark on the side nearest to the finished surface it is protecting so as to avoid the possibility of serious marring in case the sheathing is deflected sufficiently to touch the furniture.

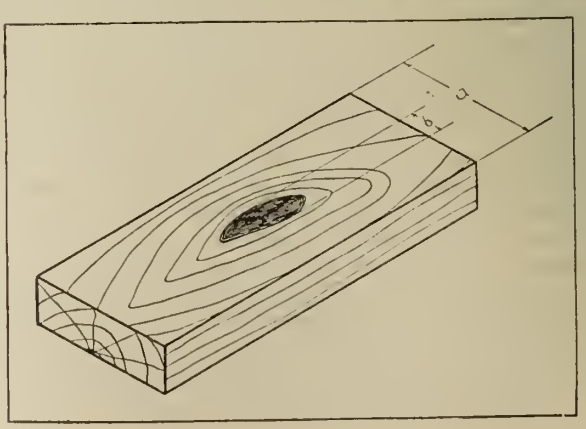
(b) Moisture content: Seasoned lumber as herein specified has an average moisture content of not more than 20% based on the weight of the wood after oven drying to a constant weight.

This section gives the maximum moisture content allowed. Ordinary air dried lumber has a moisture content of from 12% to 18% and this section permits the use of such lumber.

(c) Knots: The frame members and sheathing must be free from knots that would interfere with nailing, or any knots greater than one-third the width of the face measuring across the knot.

Knots in lumber greater than one-third the width of the lumber, measuring across the knot, would so seriously weaken the crate that the use of knots larger than that is prohibited. The reason for not allowing knots in lumber that would interfere with the nailing is apparent.

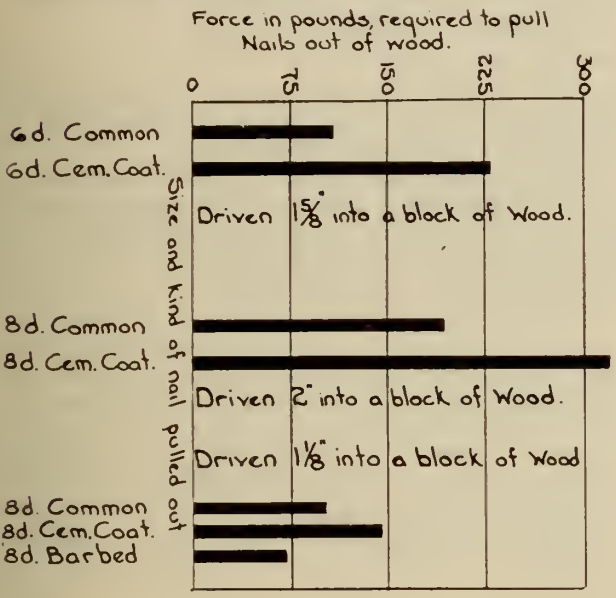
Method of measuring knots to determine whether lumber is allowed to be used:



If "a" divided by "b" is not less than 3, the lumber may be used.

(d) Nails: The use of cement coated nails is required.

Cement coated nails are required because they hold from 20% to 40% more, and they cost less per nail, than either smooth or barbed nails.



This chart shows the results of tests to determine holding power of various nails and indicates the greater holding power of cement coated nails over the other kinds.

4. Dimensions of Parts

(a) Lumber: Except as provided in paragraph 4 (b), all lumber used for framework and sheathing must be of the following minimum dimensions:

Weight of Crate and Contents	Minimum Size of Lumber Thickness	Width
Up to 100 lbs.	¾"	1½"
Up to 100 lbs.	⅝"	2½"
100 lbs. to 150 lbs.	¾"	1⅞"
100 lbs. to 150 lbs.	⅝"	3 "
150 lbs to 250 lbs.	¾"	2¾"
250 lbs. to 400 lbs.	¾"	3¾"
400 lbs. up	⅞"	4 "

The dimensions of lumber given in the table for various weights of crates is based on an extensive investigation carried out at manufacturers' plants and railroad and transfer stations, and represents the practice of those shippers on whose shipments damages are lowest.

(b) Sheathing on the top face of the crate may be as thin as the frame members resawed.

This is allowed because of the shortness of the span and also because 50% of the top is required to be covered.

(c) Sheathing must be placed on all faces of the crates, except the bottom; spacing of sheathing must not exceed 9" on the sides, 12" on the front, or 20" on the back; 50% of the top must be covered.

At least the amount of sheathing specified is required to properly protect the shipment.

(d) If any surface of a refrigerator is porcelain, the face of the crate nearest such porcelain exterior must have no opening greater than 2" wide; this may be accomplished by filling in the spaces between the sheathing with lumber of the following thickness, depending on the length of the sheathing:

Length in Feet	Thickness Required
0-2	¼"
2-3	⅜"
3-4	½"
4-5	⅝"

The additional sheathing specified in this paragraph is required on refrigerators with a porcelain exterior surface because of the much greater possibility of serious damage to such a finish than to a wood finish.

As the length of the span increases, thicker lumber is required so as to give the same protection to the surface.

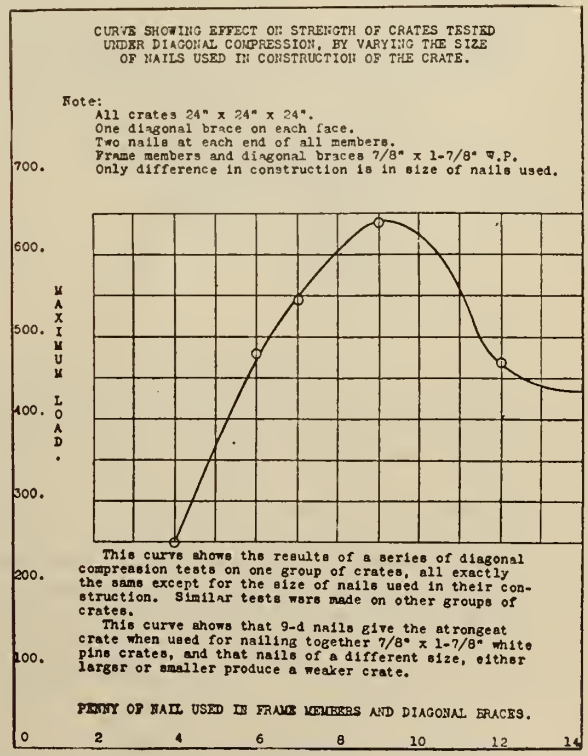
(e) Nails: The size of nails required to be used in the construction of the crate are as follows:

For nailing together frame members and sheathing of same dimensions as frame members:

	For Light Woods, Such as White Pine, Chestnut, Spruce, Fir, etc.	For Heavy Woods Such as Birch, Elm Ash, Oak, Gum So. Yellow Pine, etc
⅝" lumber	7d	5d
¾" to ⅞" lumber	8d	6d
1" lumber	9d	7d

Where the above specified nails are not available, a nail one penny larger or smaller may be used.

This table gives the size of the best nail to be used in nailing together parts of the crate. The table is based on work done at the Forest Products Laboratory, by Committee D-10 of the American Society for Testing Materials and by experiments performed by the Freight Container Bureau. The method followed by the latter is as follows:



(f) Thin sheathing, where allowed, must be nailed with nails not less than 3 penny for ¼" to ⅜" sheathing and not less than 5 penny for over ⅜" to ⅝" sheathing.

This is to insure the use of a nail sufficiently large to hold on the sheathing.

(g) When sheathing is nailed to the wide side of

frame members, the size of nails may be reduced sufficiently to prevent penetration of both pieces.

This is necessary so as to avoid damage to the refrigerator.

(h) Nail spacing: The number of nails as shown in the following table must be driven in each end of each piece:

Width of Piece	Minimum Number of Nails
up to 3"	2
3" to 5"	3
5" and over	4

The nail spacing required is in accordance with general practice. There should never be less than two nails through each end of each piece used and as the widths of the members increase the nailing should also increase so as to secure the benefit of the increase in width of the lumber.

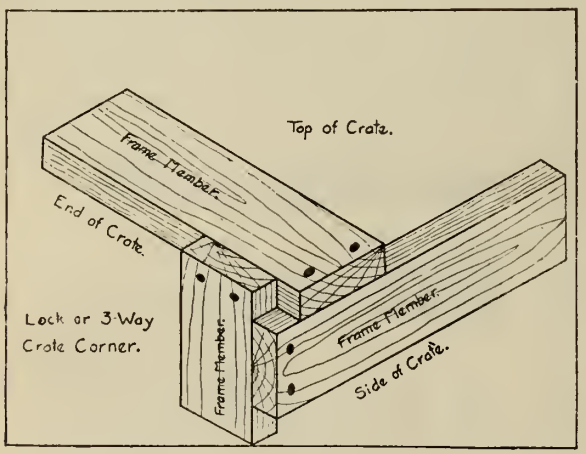
Calculations and tests have shown that the greatest strength of the crates is obtained when the nails are spaced as follows.

Where two nails are used each nail should be about ¼ of the width of the board from the edge.

Where three nails are used each of the outside nails should be about 1/6 of the width of the board from the edge, and the middle nail midway between the two outside nails.

5. Corner Construction

A lock or 3-way corner is required, preferably constructed in the following way:



A lock or 3-way corner is required for the reason that is costs no more to construct than the ordinary corner and yet is much stronger than any other corner. A 3-way corner can be constructed in 16 different ways but the preferable construction for refrigerator crates is as shown.

The reason for the strength of a 3-way corner lies in the fact that all the nails used are held in the side grain of lumber while in any other construction some of the nails are held in the end grain of one or more of the frame members. It is a well known fact that nails held in the side grain of lumber have a much greater holding power than those in the end grain of the same piece.

6. Holding Refrigerator in Crate

The refrigerator must be held in the crate so that there is no possibility of movement in the crate. This may be accomplished:

(a) By the use of excelsior, corrugated strawboard, excelsior pads or other cushioning pads tightly wedged between the crate frame and the refrigerator.

(b) By the use of wood blocks, nailed to the crate frame which when the crate is nailed up are in contact with the refrigerator.

(c) By a combination of the above methods.

Several ways of holding refrigerators in crates that are now the general practice of refrigerator manufacturers are allowed. It is required, however, that they be rigidly held in place, which is a very important provision to aid the arrival of the refrigerator at destination in an undamaged condition.

7.

This specification comprehends minimum crating specifications; there is no objection to the use of a heavier crate than herein described.

It is expected that the use of other containers or types of construction will be recommended after detailed specifications covering their manufacture have been prepared, if such containers are found to be as efficient as the one specified herein.

It is felt that some manufacturers will desire to pack their shipments in a better manner than that specified herein, by the use of more or heavier lumber, or additional paper, and such practices are commended.

As it is not the purpose of the Freight Container Bureau to prohibit the use of panel boxes, fibreboard containers, 4-one crates and other types, if it is found that such containers are properly suitable for the transportation of refrigerators, this paragraph has been inserted.

Kiln Drying Douglas Fir Common

The kiln drying of Douglas fir common is a problem which differs in several respects from most kiln drying problems. In order that the knots shall not drop out of the wood, the maximum temperature must be limited more or less by the melting point of the resin around the knots, and the humidity kept high enough so as not to allow excessive differential shrinkage between the knots and the bodywood. The difficulty of keeping the knots in place is lessened to some extent by the fact that it is usually not necessary to dry common lumber to a moistuse content lower than 15 per cent. A new complication is added, however, inasmuch as it is very difficult to bring heartwood and sapwood to a uniform moisture content as high as 15 per cent by any ordinary kiln-drying method.

These unusual requirements demand that a kiln for drying Douglas fir common shall have a very rapid and uniform circulation readily reversible in direction, and an accurate control of temperature and humidity. The only type of kiln which at present can be safely recommended for this class of work is an internal-fan kiln similar to the semi-commercial unit in operation at the Forest Products Laboratory, Madison, Wisconsin, or to the kiln used by the laboratory at Tacoma, Washington, in developing the schedules for the drying of No. 1 Douglas fir common.

These schedules call for a temperature of 175 degrees F. constant throughout the entire drying period. For 1 by 6, 1 by 8, 2 by 4, and 2 by 6 inch stock, the humidity may be kept constant at 70 per cent. For 1 by 10, 1 by 12, 2 by 8, 2 by 10, and 2 by 12 inch stock, it is better to use humidity of 80 per cent for the first half of the run, dropping to 70 per cent for the last half. The drying time varies considerably with the size and shape of the stock. For 1 by 8 inch material, dried to 15 per cent moisture, it should be about 32 hours.

A Few Opinions on Loose Pulley Practice

"Hemlock Bill's" Enquiry in the December Issue Brings Replies from Operators Who Have Had Practical Experience—Both Step and Flush Pulleys Are Favored

In the issue of December last, a correspondent signing himself "Hemlock Bill" asked for the opinions of readers on the merits of step and flush pulleys. He himself stated a case for flush pulleys, particularly when a good ball bearing is provided on the loose pulley. Practice, however, is not standardized and opinions differ on the loose pulley question. Several practical woodworkers with experience in dealing with the problem have given the "Canadian Woodworker" some excellent information which undoubtedly will be of great service. These letters, in which opinions are offered, are printed herewith:

Editor, Canadian Woodworker:

After reading "Hemlock Bill's" inquiry, regarding tight and lose pulleys in a recent issue, I have felt like offering you some of my experience along this line, but being much more at home with the tools of our trade than with the pen, I have hesitated until now, but here I wish to heartily indorse W. R. L's. letter in the January "Canadian Woodworker," suggesting equal sized and slightly crowned face for tight and loose pulleys with a level face driver. These have proved their value with me.

The writer some twenty-five years ago hailed with approval the advent of the Step T & L pulley, but after some experience with same, found that they only slightly reduced the old trouble, to add several new ones of their own, so I was obliged to turn to other sources for relief in the long standing pulley troubles.

SUGGESTIONS. For heavy belts and extra strain, I have got good results (where practical) by using a two-piece counter shaft—one piece carrying a tight pulley and other pulleys for drive pulleys to the machine; the other piece carrying the idler or loose pulley, the same fast on the shaft and turning with the same in two bearings, well spaced apart.

W. R. L. certainly well named the old open oil hole type of loose pulley a "joke" and a very expensive one it is to users, for it means a continual loss of oil, loss of power and loss of temper with no adequate returns.

Loose pulley troubles, I am firmly convinced, are due mainly to poor lubrication—the above mentioned "joke" being the prize winner over all comers.

I will now give you the results of my experience in a specification for T & L pulleys:

Loose pulleys, to be of ample diameter and the same size as tight pulley. Slightly crowned face with extra width making tight belts unnecessary. Have driving belt of good length with slack side on top. Loose pulley to have bush on shaft, containing oil reservoir, so arranged that when pulley is in motion the oil is forced out into the wearing surfaces between the pulley and bushing.

It is important to oil regularly with a good grade of oil (not too thick), so that a good circulation will be maintained between the wearing parts at all times.

Materials—I have put materials last, believing that style of construction and care are of first importance. The writer has been operating a number of variety moulders or shapers for several years at extreme speeds, some as high as 12,500 r.p.m. with corresponding high speed counters and loose pulleys at 2,250 r.p.m. We have used cast iron and bronze bushes; some of each giving good results and some very unsatisfactory, the latter probably due to neglect at some time or other. We are now using ball-bearing loose pulleys and are gradually adding to same in our plant with good results, where the duty is extremely hard.

Yours truly,
W. E. R.

* * *

Another practical man favors the step down loose pulley, which he claims releases the belt of strain when idling and gives greater tension when driving. His arguments are presented in the following letter.

Editor, Canadian Woodworker,

In answer to Hemlock Bill's inquiry in the December issue of the "Canadian Woodworker,, as to the better of the two—step down loose pulley, or the flush face pulley.

I see two distinct advantages in the step down loose pulley over the flush face. First, the belt is relieved of all strain while it is running on the loose pulley, which is one point in favor of the belt; second, when the belt is shifted on to a tight pulley, you have an inch and a half of tension to increase power efficiency. This would apply to either ball bearings or metal bearings, as both would be favored by step down pulley because of the leeway of one and one-half inches of belt length greatly relieving friction on bearings as well as prolonging the life of the belt. But it must be borne in mind that pulleys must be in alignment for the shifter to act on the belt without injury thereto.

Woodenware Jack.

* * *

Editor, "Canadian Woodworker,"

I read in a recent issue of the "Canadian Woodworker" with great interest, some comment on idle or loose pulleys. While I am not a practical woodworker, I am a practical machinist and millwright, and during my 14 years' experience of installation and maintenance work in factories, I have found that two crown face pulleys of equal diameter, preferable to any other when properly lined up with a straight face driving pulley, provided the bearing in the idle pulley is properly made. My way of making a loose pulley which always gives service, is this:—Get the pulley specially made of cast iron with a large O.D. hub, for example, if for a 2-7/16 shaft, the hub diameter should be 5 inches, bored out to 2 15/16 in. for a distance of ½in. on each end and the rest chamfered to 4 inch diameter. Then make a bronze bushing the length of the hub, snug press fit in the pulley, which may be pressed in after a series of 1/8 or 5/32 holes are drilled in the bushing.

I used this on all high speed idle pulleys and

found it gave excellent satisfaction if properly balanced. The oil is put into this with a hole drilled and tapped for a 3/8 in. pipe plug and will run a long time without re-oiling.

Yours truly
E. D. Horne.

Increase the Men's Interest

Give Them Something More to Think About Than Their Weekly Pay Envelope —Keep Them Interested in Production

By B. M. THOMAS*

One of the most striking differences between modern progressive plants and those which still cling to old methods of manufacture lies in the degree of knowledge of general operating conditions which is possessed by the men working these plants—not only by the foreman but also by the labor. I do not mean to say that labor need be familiar with the policies of the company or anything of the sort; but in order to keep a man enthusiastic over his work beyond a point of interest in his pay envelope, it is necessary that he know to a certain extent why he is doing certain things as well as how to do them. It keeps a man's eyes forward and tends to prevent a sense of self-sufficiency in the job which he is holding at the time.

Overcoming Difficulties

It is always difficult in any plant to get an accurate distribution of the time put in on various jobs by the workmen. The details of this must be left somewhat to the foremen and the men themselves who must make out slips or indicate in some way the distribution of their labor for the preceding day. If the men do not understand why this division of their labor must be turned in or what finally becomes of the information, it is improbable that accurate results will be obtained. Eliminate the drudgery of the process and the battle is half won.

Let us assume that the beatermen, in a paper mill, for example have no knowledge of the different grades of waste paper which they put into the beaters of a paper mill day after day, and that these same beatermen are not impressed in the slightest degree by the fact that on certain days at certain intervals they furnish varying amounts of kraft pulp and sizing into these beaters. Assume that they know nothing of what they are doing and that their work is entirely a mechanical process. No matter how perfectly their work may be preformed from a mechanical standpoint, less satisfactory results will be obtained than when the man educates his labor, securing at the same time the slightly less perfect mechanism of the man who is not the automaton.

The successful manufacturer as well as the successful executive makes an effort to educate the men under him so that they will be capable of growing as he grows. The standard of a plant or of an organization will be no better than the average of the men working in it. The man who is worthy of advancement will grow if he is unhampered by the fear of making mistakes. He should be accorded full confidence or else he should be considered incapable of doing the work required.

*Fibre Products Division, Chicago Mill and Lumber Co.

The Chart on the Wall

In the office of our mill at Cincinnati we keep a large graphical chart roughly drawn, which seems to be very successful in that it keeps the men interested in production. This chart shows graphically every day the production of each machine, the total production of both machines, the coal consumed and the electrical current generated by the plant and by the city. The chart is large and hangs in a conspicuous place on the wall so that anyone who wishes may examine it. The chart shows facts in such a way that they attract attention which ordinarily would not be given. It does not deal with figures although it is mathematically correct. It shows the trend of production, the trend of power generation and expenditure, and avoids the use of figures which are an obsession to the ordinary workmen. In this way the men are kept informed of mill conditions with none of the drudgery ordinarily necessary to produce this result.

In every plant an effort should be made to picture graphically everything which is capable of being charted. To the average workmen a picture means infinitely more than a figure. The reading of a chart requires no concentration. Moreover, the chart line of a graphical instrument is obtainable momentarily while figures cannot be obtained for several minutes at best.

A centralized control of production is of great value in any plant, particularly in a plant of our kind which involves two separate operations— the mill and container factory. These operations are distinctly different and yet one is dependent on the other. One cannot (or should not) be operated without the other. In order to minimize waste and excessive handling and storing and to keep the plant on an efficient basis the control of production must be in the hands of one who knows intimately both operations. One who is not in close touch with the mill cannot even guess at the efficiency lost by an untimely change from chip to test board or the running of an order when conditions are unfavorable.

There is a striking difference between the mills of yesterday and those of today in this respect—that mills which were formerly dependent for their success on the ideas of their individual superintendents now have at their disposal highly specialized information which has been gathered together by engineers. As a result the ramshackle, hit or miss type of mill which existed formerly, is no longer seen. Today you see mills with standardized equipment throughout—equipment which is the result of the knowledge accumulated from all these old superintendents augumented by modern engineering. It is the combination which is making the industry one of the greatest in the country.—From "Boxes," the organ of the Chicago Mill and Box Co.

How Can Short Materials be Used?

A correspondent writes he finds himself with a large quantity of short materials on his hands, since the goods which he manufactures in his plant require long material. These short pieces are in lengths up to fifteen inches, and are mostly clear No. 1 stock. He wants some information regarding what he can do with this material in order to put it to some effective use.

Kiln Dry Principles and Practices

Practical Information Concerning the Operation of Kilns—Causes of Defects and Methods of Testing—Drying Schedules—A Superheated Steam Process

By F. O. FAREY
Chief Chemist, Robt. W. Hunt & Co. Ltd., Montreal

(Concluded from last issue)

It is not within the province or scope of this paper or it is possible to give hard and fast schedules for any given lumber. There is, however, a quite extensive series of schedules which have been worked out by the Forest Products Laboratories at Madison, Wisconsin, and given in a sheet known as Technical Note, Number 175, under the heading of hardwood and soft wood drying schedules. This can be obtained upon request from that Laboratory, and is valuable as a guide both to new and experienced operators, since one is often called upon to treat wood which is different from the kind usually handled and a reference to these schedules will put the operator on his guard as to the general or comparative way which each particular wood should be treated. Differences in equipment and the way in which the wood responds to the treatment will tell the experienced operator how and when these schedules may be modified.

It is not desirable that the writer should incorporate these treating methods in detail as given in this booklet. However, it may be stated that the treatment of soft wood is divided into three general schedules which are each modified into three or four subdivisions depending on the kind of wood and the thickness of the sections and original moisture. The initial temperature for the most severe treatment varies from 180 to 200 degrees Fahrenheit, and a relative humidity from 85% to 30% depending on the original moisture content of the stock, down to the mildest treatment having an initial temperature of 135 degrees F. and 85% humidity. The temperature is raised in this schedule to 175 degrees F. and the humidity is lowered to 30% as drying progress at definite stages as shown by the moisture content of stock removed from time to time from the kiln. The hard wood schedules are divided into eight distinct divisions. The most severe treatment compares very closely with the mildest soft wood treatment for basswood and birch up to 1½ inch thickness down to the mildest treatment where the initial temperature of 105 degrees F. and relative humidity of 85% and a final temperature of 135 degrees F. and a relative humidity of 40% as drying progress. The latter schedule being applied for certain southern low land oaks of 1½ inch thickness.

Care in Drying

There seems to be a point in the drying of all woods up to which, or possibly down to which, the greatest care must be exercised. From green timber with high moisture content down to a moisture content of about 25 to 30 per cent, based on oven-dry weight, our greatest care is required. This is what is known as the fibre saturation point of practically all wood. Above this water exists within the cells in a free condition and must be eliminated slowly and uniformly. Below this percentage the water is physically or chemically combined with the fibres and drying usually may be somewhat hastened.

It has been proven that no shrinkage occurs in wood above the fibre saturation point, water being gradually evaporated from the outside sections without any change in volume of timbers. As soon as there is a difference in water content a gradual transfusion takes place from the inner sections. This proceeds until the outside fibres contain a moisture below the fibre saturation. Then shrinkage starts around the outer portions but does not yet start in the inside. Thus you have an outside area trying to reduce its volume, but prevented from doing so by a resistant interior. One of two things is bound to happen when this condition exists, either the tension will become so great on the outer fibres that they are no longer able to stand the strain and the wood starts to check or these outer fibres will take a set in an expanded condition, allow the passage of water from the interior to pass through them and finally completely dry out themselves without taking their normal shrinkage. The interior sections as they lose their moisture consecutively below the fibre saturation point have a tendency naturally to shrink. Here there are two opposing forces at work. The innermost zones still have their original volume and are under pressure and the intermediate zone is in tension as occurred in the outer fibres originally.

Cause of Checks, Case Hardening, etc.

One of three things may now happen. If the outer fibres had started to check, the probabilities are that the intermediate section will check in the same place since at that point there is no fibrous bond between the intermediate and outer zones. If the surface had set in an expanded condition one of two things may happen. The fibrous bond with the outer portion may be sufficient to hold the interior to the same volume and the whole section dry and set in an expanded condition. This may not be given the term "case hardened." If the fibres of every zone have set uniformly throughout it is not called "case hardening" but simply a set in an expanded condition. If, however, the setting or shrinkage has not been uniform when the moisture content throughout the section is the same and there are set stresses existing throughout the different zones, the condition is called "case hardening." If these internal stresses exist to a sufficient extent due to internal shrinkage and the fibres are not strong enough to withstand the tension put upon them either the annular rings will separate, producing "shakes" or checking will proceed radially giving a honeycombed condition.

You all know the value of lumber or timber which is honeycombed, shaky or checked, depending upon the visible extent of these conditions. However, there is no visible means of detecting wood set in an expanded condition, but after the lumber has been taken from the kiln, the fibres usually begin to take

up moisture from the air, the set and set stresses are relieved at first on the outside setting up other stresses of a reverse nature. These outer zones are now in a condition to shrink in their normal course when allowed to dry again. This will cause checking and warping. If, however, the lumber which has set in an expanded condition is allowed to pick up moisture throughout the whole section all set and set stresses are relieved and the whole board or timber will be in a condition to shrink normally, as it would have done if the drying had been properly carried out. One is thus liable to have a large shrinkage in a section when the moistrue content was relatively low as it came from the kiln.

Shrinkage Not Indicated by Moisture Content

Contrary to the opinions of many, it is the writer's view that the moisture content is not a criterion of future shrinkage, nor is the shrinkage obtained in the usual tests made immediately upon removal from the kiln a direct index of the shrinkage which may occur when the lumber is put into service.

While the writer was preparing this paper an idea occurred to him which may be of value to the testing departments concerned. Time would not permit working this out in detail, but the principle is this:—Take the narrow section to be used for moisture and shrinkage tests as it comes from the kiln, weigh and measure and then allow to stand in a moist chamber for a period of time to relieve any set which exists. Then re-dry at temperatures which will prevent any tendency to set. This is purely an idea which did not develop in time to make the necessary experiments to prove its value, so this work is left for any interested parties.

A cry may go up from some of the kiln operators if more time is required for testing purposes than has been usual, however, these tests may not be necessary for routine work but performed periodically, if proven of value, as a guide to the operator.

As stated before about 25% moisture on the oven dry weight of the samples is the fibre saturation point of most woods and a point under which it begins to shrink. In looking over the drying schedules suggested by the research work done at Madison it is noticed that the initial humidities range from 80 to 85% per cent, which at the usual temperatures, especially for hard woods and some soft woods gives a condition which will prevent the outside fibres under any circumstances from drying below 15 to 20 per cent. In view of the fact that moisture is being transfused from the interior the moisture in the outside areas is maintained at or about the point at which shrinkage occurs and the speed of the evaporation for different woods is regulated by the temperature. As the 25% saturation point is approached for the entire stock the outside areas dry further and begin to shrink. Here is where trouble is liable to occur either from checking or case-hardening. Here the contents of the kiln must be watched to observe how the wood is reacted and it is also very desirable to remove samples from the kiln and test in a manner which will be described later.

Counteracting Checking Action

At the sign of checking, hollowing or pinching of surfaces or internal stresses as determmed by test, measures must be taken to counteract the action. Surface areas must be allowed to take up moisture to relieve strains by increasing the atmospheric humidity to a sufficient degree. Introduction of steam in sufficient quantities is the usual method and where the moisture content of the wood is relatively high say around 5%, humidity is increased to 10% from one half hour to several hours, depending on the extent of the trouble. Not any more than six hours for each inch thickness of timber is practically certain to relieve the most severe conditions . Temperature is often raised 20 to 30 degrees during the steaming and, if so, care should be taken to allow the kiln and stock to cool to the drying temperature before materially lowering the general humidity of the kiln.

Steaming should be resorted to at any time that danger appears and may be required several times during the period of drying. It also raises the temperature of the interior of the timber, thus allowing a more rapid transfusion of moisture, but unnecessary steaming or over-steaming may do more damage than good by working the wood and slowing the process. No detail of this paper can tell an operator how much to steam, but it must be left to his own good judgment with each individual charge in his kiln. Many operators never enter a kiln, and it is not the most pleasing thing to do, but it is a measure of saving much valuable timber and nipping your troubles in the bud.

Examine Lumber Before it Goes to the Kiln

Your timbers should be examined before they go into the kiln, not only for moisture content as a whole, but you may have checking and case hardening conditions when received as well as in the kiln. In this case steaming is the only remedy to relieve initial stresses. Also you may have mouldy conditions or mould may develop in the kiln under low temperature and high humidities. This mould may be killed by steaming at 170 to 180 degrees F., for not more than an hour and maintaining a 100% humidity with live steam. The quicker the temperature is brought up the better, as it is not desirable to heat the interior of the timber more than necessary and it is essential for the kiln to cool to drying temperature in nearly saturated atmosphere.

Also some steaming may be resorted to at the end of the drying process, especially if tests show that there are any stresses existing and interior moisture above 7%. Many of you are acquainted with the method of testing lumber during the process of drying, or at the end, but to others it is not so familiar.

Testing After Drying

Remove from the kiln samples, which will be representative of the stock. These may be placed when the charge is laid, so that they may be easily removed as desired. Cut off ends for about two or three feet so that it will not be affected by end drying. The Forest Products Laboratories have devised the following tests, which have been used by the writer and they make certain recommendations for the rectification of unsatisfactory conditions.

Four one-inch cross sections are now cut from the board. The first section is dried at 212 degrees F. if the average moisture content is desired. A second section is sawed parallel with the broad side of the board and one half inch from the outside if the stock is two inches or more in thickness, or one fifth the thickness of the board if under two inches. Moisture is determined on this outside section. Trim an equal amount from the other three sides of the remaining part and determine the moisture. This will give an idea as to the uniformity of drying.

A third section is sawed parallel with the broad side of the original board, leaving if possible one half inch of solid wood. The same thing is done on the other side. Two sawings are made on boards up to two inches thick and five sawings are made on thicker boards. For sections having three prongs, remove the centre one. For sections having six prongs remove the second prong from each side. Sawings, of course, should be made only about three quarters through the section, or at least leave enough solid wood to hold the prongs rigid. The fourth section is simply sawed down the middle to represent resawed lumber.

Observe the action of the prongs immediately after sawing, and then set the specimens in a warm room to dry. If the prongs remain straight on the saw and, after room drying, the lumber is free from stresses and of uniform moisture content, or if they turn in on the saw, but become straight on drying it requires no special treatment.

If the prongs remain straight on turn out on the saw, but turn in on room drying, the moisture is uneven and the outside has set in an expanded condition. If the moisture ranged above 18%, steam at 160 degrees and 100% humidity for one half hour to three hours; if moisture is below 18%, the charge should be treated at 160 to 185 degrees and a humidity that will just permit moisture to be taken up.

If the prongs turn in on the saw and do not turn out on room drying the lumber is case hardened, but the moisture content is uniform, use a temperature of 160 to 180 degrees and a humidity just high enough to moisten and soften the wood for a period of six to twenty-four hours, but do not have a humidity high enough to allow the surface to take up too much moisture, or stresses may be revised on redrying.

If prongs remain turned out after room drying the inner zones are set in an expanded condition and the stock should be treated about 24 hours, depending on thickness, at a temperature of 165 to 185 degrees, and 65 to 70 per cent relative humidity for lumber where the inner zones contain between 7 and 12% moisture, and from 70 to 80% relative humidity when the center contains 12 to 15% moisture. Below an internal moisture content of seven per cent conditioning may be dangerous and above 15% moisture this condition seldom occurs.

In all steaming or conditioning processes the kiln and lumber must be cooled to operating temperatures and humidity conditions high enough to prevent drying must be maintained during the period of cooling.

These tests apply for examination of lumber during kiln drying or to determine when to remove from kiln. No condition of lumber can be assumed without careful examination and tests. Any rule-of-thumb methods will, in all probability, either give an inferior product or require a uselessly long time with resultant extra costs.

A reduction of time of drying can only be accomplished by vigilance and an exact knowledge of all conditions at all times.

Superheated Steam Process

A superheated steam process which will dry lumber from the green state to 10 per cent moisture in 24 hours or less has been worked out at Madison for some lumber, such as the firs, Western hemlock, Western and Southern yellow pine. This is carried on by forcing superheated steam at high velocity in alternate direction through the kiln. This consumes more steam than the older process and temperatures must not be maintained for more than two or three days. The writer has been asked if any special processes had been developed for drying oak timbers. There are schedules for oak up to two or three inches in thickness and there is no reason to doubt that much larger sections could be treated with equipment, where all conditions of temperature and humidity are under perfect control. However, some types of oak are very difficult to handle and it all depends on whether the results obtained are worth the possible loss, time, trouble and cost of treating this timber.

There have been questions as to whether the kiln dried lumber is equal to air seasoned lumber. To this I would say that lumber in general is just as good if properly kiln dried as if air seasoned, it should be better because in the kiln all factors can be kept under control, whereas in air the temperature and relative humidity is beyond human control and may vary decidedly from time to time.

There is a feature in connection with kiln drying, in which most of you are more or less directly interested—to what extent should the drying process be carried and what moisture should be left in the wood when it is used for the various purposes?

The final moisture content of wood is a function of the temperature and the relative humidity of the atmosphere to which it is exposed. If it is too wet it will dry out and shrink. If it is too dry it will take up moisture and expand. The relative humidity has far more effect than the temperature, but this is often affected by a change in temperature.

Some of you are interested in car construction, others in furniture or domestic construction. The writer, for instance, enquired of several parties in the United States and Canada if they had records of moisture content of lumber taken from cars, old buildings, or furniture. Since no data seemed to be available numerous samples were taken from different parts of cars under repair at Montreal, and samples of wood which had been stored in heated buildings during and previous to the middle of December of last year. The results obtained should not be considered as conclusive for other places, or other periods, but are given as an idea of what experimental work or studies should be undertaken by individuals interested in the different phases of wood construction.

That they may be better understood by all, these results are reported both on the basis of the samples as received and on the oven dry weight:—

	% Moisture on basis of original sample.			Moisture on basis of dry sample.		
	Max.	Min.	Ave.	Max.	Min.	Ave.
Box car sheathing and lining	12.8	9.8	10.7	14.6	10.9	12.0
Decking (Car)	18.3	11.0	13.8	22.4	12.2	16.1
Roofing (Car)	28.7	9.6	18.9	40.6	10.5	24.3
Car frame timbers	14.0	10.0	11.9	16.6	11.0	13.5
Wood stored in heated building	6.7	5.4	6.2	7.2	5.8	6.6

Some of these results, of course, may be due to lumber becoming dry indoors and others exposed to water.

Records from various parts of the United States show that the lowest average humidities are 32% for spring and summer at Phoenix, Arizona. Here at these seasons the natural moisture content of wood is five or six per cent on the dry basis, whereas the average winter humidity at Galveston is 84% giving

a natural equilibrium of 18 to 20 per cent of the dry weight.

11 Per Cent Moisture at Point of Lowest Humidity

The meteorlogical records of Canada were examined by the writer from 1916 to 1921. The lowest average humidity for any month was found at Moose Jaw was 57%. This would give wood a moisture of eleven per cent if left there long enough or as some of us calculate 10% on the basis of the original sample. The wettest month was at the same place with a humidity of 92% at 33 degrees F., or a moisture content to wood of 22½% dry weight or 18½% on the original weight.

The maximum monthly humidity of Montreal was 85% and the minimum 62% or an average for a period of years of 72% and average temperature of 42.5 degrees F. Therefore, we would expect the natural mean moisture content of wood there to be about 15% on the dry basis or 13% on the original basis.

How Can We Interest Young Men in the Planing Mill Business?

Two Viewpoints on this Topic as Expressed in Addresses Before the Western Planing Mill and Woodworking Association—A Great Need for Training Apprentices and Keeping Them Interested

(1) By J. P. McDonald

The topic, "How Can We Interest Young Men in the Planing Mill Business?" is a subject worthy of serious thought and prompt action. To say it briefly and in the language of the young men of today, "Pay me a man's wages, stand the loss of my mistakes, and the cost of my instruction for one year, and if I like it well enough to stick, well and good." We might under these conditions be able to make some planing mill mechanics. This may be somewhat exaggerated, but in general is the attitude taken by a large percentage of our young fellows.

In my 40 years' mill experience I have trained and turned out a very large number of good men, and many of them are today the best in their respective branches. We have in our employ at present about 12 men, some have been with me for 10 years, others for a shorter period, and I can say they are the very best in their particular lines. However, these men were not made along the lines expressed above.

High School Education Desirable

Our policy is to select boys with a high school education, if possible, living with their parents, pay them a fair wage, approximately 60 per cent of a man's pay; treat them kindly, and if they make mistakes show them and do not scold unless his mistakes become too frequent, or are due to carelessness, in which case it is about time to consider if he is adapted to his position; if not, better stand your loss and let him go.

He may have gained some experience while in your shop that may be valuable to him in his next position, and after trying out other lines of employment, he doesn't yet find that to his liking, he will probably come back seeking work. Do not turn him away; give him another chance and you will find, as I have, that he will be much more interested and anxious to make good. This kind usually make the best men and stick the longest on the job.

There is another kind of boy who comes into your shop, works a while and about the time he is of some value to you he wants a man's wage and because he does not get it, quits, goes over to a competitor, hits him for a job, and is asked where he has been working. He will reply, "Over at McDonald's the last six months." "What wages did he pay you?" Of course he lies when he says full wages. Without verifying this, and needing a man on this particular machine, he gets the job and starts in as a full-fledged journeyman. If the shop needs help very badly he will eventually work in and may make a good man, but my experience is this class of boy is shiftless and never will be a mechanic.

If it would be possible to take some definite action on the apprenticeship situation, such as would stop the abuse referred to above—that is, one shop taking an apprentice away from another until he has served at least two years—and would ensure that the mechanic when leaving would be required to have a written clearance card showing his standing and the length of time in the last job, and how proficient in his line—then, I believe, we, as employers, would make much more effort to interest young men knowing that they would have to serve sufficient time in our shops to at least repay us for the time and expense incurred in the training.

In our city we have, perhaps, the oldest mill association on the coast, and have had continuously for 23 years the same secretary, who knows practically every mill employe in our plants, and is thereby able to keep in touch with the men and conditions in each plant.

We confine ourselves principally to furnishing help to members; pledge ourselves not to bid against each other for help, and will not take each other's men unless with the consent of the mill where a man last worked. We also make a wage schedule and maintain such a scale, and it works out very well. We pay good living wages, and are enabled to keep our men on the job, which makes the turnover of labor a minimum, which is one of the greatest assets to any plant.

My Experience as an Apprentice

When I served my apprenticeship I was bound with a legal indenture for five years. During the first two years my father had to board and lodge me in town, as we lived in the country and it wasn't possible for me to live at home and work in the city. The first and second year I received no wages, and boarded myself; the third year I received 1s 6d, or

37½c per day of 10 hours; the fourth year 2s 6d, or 62½c per day; the fifth year 4s, or $1 per day. The journeyman's wages was 7s, 6d, or $1.87½ per day.

If an apprentice jumped the job, or quit, the boss made complaint to the police station, or magistrate in his locality, and the apprentice was immediately brought into court and given his choice of returning to his boss or serving the remainder of his time in an institution conducted by the state—a stigma few boys desired. The result was that this system produced real mechanics and men that we all would like to employ in our shops. However, this system is not applicable to this country, or this age. The old school is nearly exhausted, and wages in England are now as high, or nearly so, as here, and with the restriction on immigration, we are not getting any European skilled mechanics. The question confronting us is, how are we to replenish our supply? As I see it, either by the apprentice system or through the public schools.

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(2) By C. E. Cowdin

Why is it that more boys are not taking up the planing mill business? The cause certainly must be either with the boys themselves or the planing mill owners or the business we are in.

I believe that the trouble is really with ourselves or the people in general. Conditions have changed in the past 20 years very much. All of us are anxious to have our boys go out into the world able to earn their living in a way that is honorable where they will have to do as little manual labor as possible, and we have forgotten the fact that it is necessary for a boy to be taught that one of the most honorable things he can do is to be able to work with his hands. It seems like quite a distinction to have a child able to come out of college with a degree as a lawyer, doctor, architect or engineer, but we feel if he has to go to work as an apprentice in a planing mill or any other trade we are sort of ashamed of him. It seems like quite a distinction to have a child able to mix a few colors and place upon canvas a fine picture, but if he is able to build with hammer and chisel a beautiful buffet or other beautiful piece of furniture it is quite commonplace.

Now what encouragement are we as millmen giving to the boys to take up our work? The trouble is that we have gotten along ourselves in the world and have failed to bring ourselves up to the plane we have taught the boys to respect. It is going to be necessary to improve our working conditions and it is going to be necessary to pay the artist in our line somewhere near what his skill justifies if we expect to have the better boys work for us. It is true that we will always have an occasional straggler, the boy that comes to us just merely for a job, but if he has any ambition he is going to fit himself by going to night school or in some other way for some occupation where working conditions are better and the pay is more remunerative.

Professions Are Overcrowded

We are not the only ones, however, that are suffering. You can talk with the plumber, the plasterer, painter or carpenter, or any of the trades in the building industry; they will tell you the same thing. they are all suffering on account of lack of apprentices. We have plenty of engineers; the boys are studying to be engineers. There are plenty of architects; they are coming on faster than we need them. The profession is overcrowded just the same as the doctors and lawyers and all of the other professions. Now, it occurs to me, why wouldn't it be a splendid idea to have a course in the colleges to teach our boys the planing mill business?

I am only speaking as a manufacturer of odd millwork, but it is a big thing when you stop to think of it. Our industry is one of the leading industries. Isn't it worth while to teach our boys so when we send out our millwork which beautifies the building being erected for future generations they will appreciate its value? Isn't it worth thinking about? We are not going to be contented with wood butchers; the woodworker must be a skilful man to turn out this class of work. In Portland they have a guild which, I believe, is going to help. In order to become a member of this guild you have to be an expert in your line. I attended a meeting a few weeks ago where the charter members were presented with diplomas. After the ceremony was over they asked the mechanics what they thought of it. One man, past 50 years of age, said, "Gentlemen, I have been a mechanic all my life and this is the first time we were ever honored in this way, and I want to tell you we appreciate it."

Gentlemen, we have got to look upon our employes differently than we have in the past. The class of boys that are coming on now are educated better than they used to be; their influence is different; they go out into the world expecting to start differently than we who started 20 or 30 years ago did. I started in the planing mill business myself because I had to have a job. I had no intention of following it as my life's work at that time, and there have been many times since that if I had been able to, I would have fitted myself for something else and I suppose 90 per cent of the men who are here today who have come up from the bottom started the same way. I doubt if there are 10 per cent who have deliberately chosen the planing mill business. We have to make it a business that is worth while, a business that a young man can look at and say, "If I become successful in that line, I can make a reasonable income and have an honorable occupation."

The Industry is Improving

The planing mill in the past has been looked upon by the public and by the banks in particular as an unhealthy institution whose owners seldom get dividends; therefore, it made it necessary for them to squeeze the nickels to the limit. It was necessary for them to cut down on working conditions, but I believe that we have at last got the brains of the industry to working and that conditions are going to be changed. I believe that with our cost systems and by comparing notes with each other we are eventually going to find out how much it costs us to manufacture a piece of odd millwork and we are going to be able to make a reasonable profit upon it and will then have an institution that is an asset to any community instead of a liability, as they have been in the past.

When your boring bit binds in the wood, examine the outside cutting parts and see whether they give it complete clearance. A magnifying glass will at times show these parts completely worn. Sharpen them so that the bright, worn part disappears.

Rules for Piling Lumber for Air Seasoning to Avoid Deterioration

1. Foundations

(a) The foundations should be strong and durable.

(b) The top of each foundation should be level; and from front to back the top surface of the parallel skids should be in alignment, so that the lumber to be piled will bear equally upon each one.

(c) The first skid should be raised above the second and the second above the third to allow a slant to the stack of one inch to every foot.

(d) The skids, preferably 2 by 4-in., should be spaced not over four feet apart, except for heavy planks and timbers.

(e) The foundations should be of sufficient height to provide space for free circulation of air under all parts of the pile.

2. Lumber

(a) Boards of equal length should, preferably, be piled together.

(b) The ends of the boards should rest upon the front and rear skids.

(c) A space approximately ¾-in should be left between boards in the same layer when piling 1-in., 1¼-in., and 1½-in. lumber; 2-in. for 2-in. and 2½-in. lumber; and 3-in. for material 3-in. and up.

(d) Lumber piled in the open should have the front ends of boards in each layer slightly protruding beyond the end of the layer beneath in order to provide a forward pitch to the stack of 1-in. to each foot in height.

3. Stickers

(a) Stickers should be surfaced two sides and should be 2-in. wide, of uniform thickness, preferably 7/8-in. for 1-in. lumber and 1½-in. lumber Their length should be a few inches in excess of the width of the pile.

(b) Stickers should be placed upon the layer of boards immediately over the skids and kept in alignment parallel to the front of the pile.

(c) The front and rear stickers should be flush with, or protrude beyond, the ends of the boards.

4. Roof Protection

Cover boards, as a roof protection, should be laid on the top of the pile, extending a few inches beyond the front and rear of the stack.

5. Spacing Stacks

Space between the piles should not be less than two feet and increased to four or five feet if yardage conditions allow.

6. Dimensions of Stack

The customary width of the stacks is from four to eight feet. The height is governed by the size and the character of the lumber and the methods of moving it.

7. Treated Ends

Lumber 2½-in. thick or over, unless of the lower grades, should have the ends treated with a brush treatment of paint or some liquid filler.

8. Ground Cover

The ground occupied by lumber piles should be covered to a depth of at least 4-in. with cinders (not ashes).

Trade Enquiries

Wants Bird's Eye Maple Veneer

A firm of motor coach builders in the south of Scotland are in the market for bird's eye maple 3-ply ⅜-inch veneer and ask for names of Canadian exporters. For further information apply to the editor of this publication. Refer to inquiry No. 1085.

Wants Agency for Moderate Price Chairs

A manufacturers' agent in Barbados would like to obtain a Canadian agency for cheap chairs, including upright, in cane and wooden bottoms and also cane seated rockers. Name of inquirer may be obtained from the editor of this publication. Refer to inquiry No. 1202.

Infants' Carriages

A Bristol firm who factor in house furnishings desire quotations, and if possible samples, of babies' collapsible carriages. For further information write the editor, referring to enquiry No.1365.

U.S. Duty on Veneers

In applying the provisions of the Tariff Act, the Customs Division of the United States government has defined veneers of wood and lumber. It has been decided that all lumber 1/8 in. in thickness or less should be assessed with duty as veneers of wood at the rate of 20 per cent ad valorem of the Tariff Act of September.

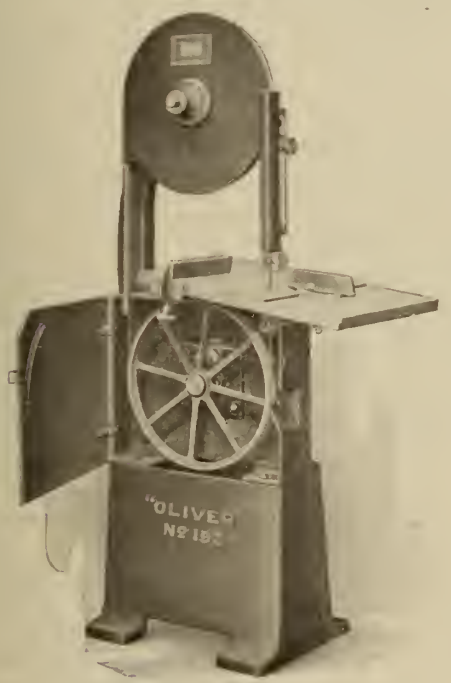
Too Many Sash and Door Sizes

A conference was held in Washington recently between the officials of the Division of Simplified Practice of the Department of Commerce, United States government and representative of sash, door and millwork interests. The conference resolved that 30 per cent of the present sizes of sash and doors should be eliminated and recommendation to this effect is to be submitted to the industry some time in May next, for adoption.

Machinery & Equipment

An 18-in. Portable Band Saw

A new portable band sawing machine, known as No. 192, has just been brought out by the Oliver Machinery Co., Chicago, Ill. It is an 18" machine, that is, the wheels are 18" and the saw has full capacity between the saw and the column. The makers claim to have chosen 18" because after experimenting with 12, 14, 16 and 18" wheels they have found that



The Oliver No. 192 Band saw

18" is about as small as the machine can be made in a practical way and have the band saw blades not crystallize. It was also very noticeable that with shorter saw blades than this machine uses, viz., 9' 8", the saws needed sharpening too often.

The machine is ball bearing throughout, is portable, self-contained even when motor driven, and is directly fitted with motor cord and switch ready for use when attached to the ordinary lamp socket. Some special features of this machine are: The large cast iron table, the mitre cross cut gauge and the parallel ripping fence. These are very well illustrated in the accompanying cut.

This machine uses saws up to ½" wide ordinarily and by using the gauges it will rip up to 11" wide and cut-off and mitre up to 8" wide. The table tilts to 45 degrees. Frictionless roller guides are furnished above and below the table.

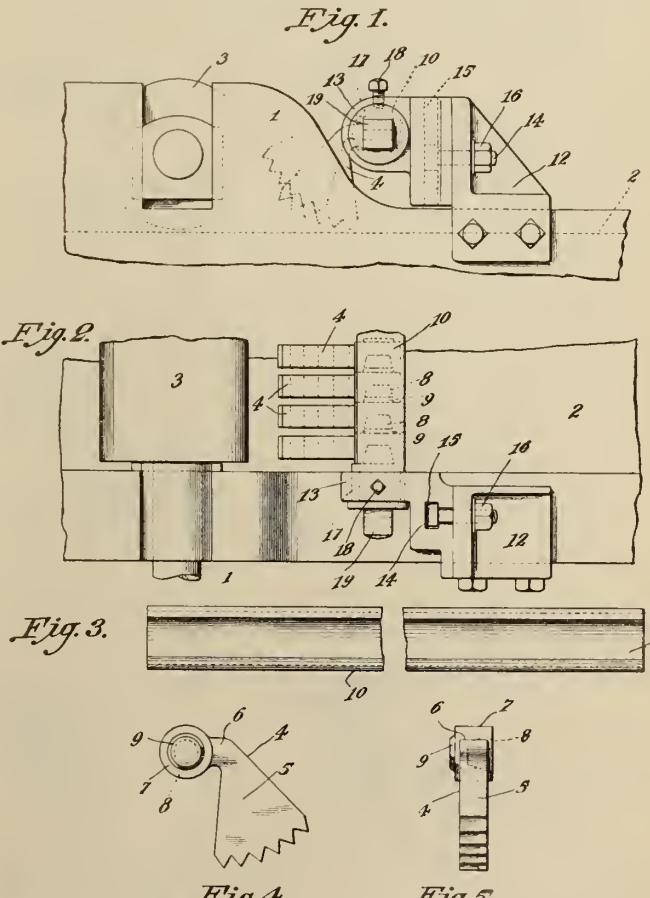
The machine is carefully guarded. A hinged steel door covers the lower wheel; two circular steel guards completely cover both sides of the upper wheel and they do not interfere when changing saws; a U-shaped cast iron guard, adjustable with guide post, covers all that front portion of the saw not actually doing cutting and a U-shaped steel guard encases the rear portion of the saw.

The machine although illustrated mounted on a floor base may be furnished without this base for mounting on a bench.

The method of drive is through a reduction gear box with hard steel pinion and composition spur gear, all running in oil. The machine is completely jigged so that parts are interchangeable and the belt driven machine can be converted into a motor driven machine at any time. By means of the simple drive and the ball bearings the power consumption is decidedly low and full efficiency is secured. The enclosed motor, which is also ball-bearing, is ⅓ h.p. and operates at 1,800 r.p.m.

Safety Device for Planers

In woodworking machines in which material is fed into a machine and subjected to the action of rapidly rotating cutters, saws and similar tools, when the work is not securely held it often occurs that the contact of the tools with the work results in the violent throwing of the work from the machine and seriously injuring operatives or bystanders. To pre-



Details of a safety device applied to a Whitney planer

vent this there has been invented an automatically operating stop, parts of which contact with the work, whereby when the latter is properly introduced into a machine any movement induced by the operation of tools tending to throw it from the machine will instantly be stopped and the work be held in a position to be quickly brought again into place to be operated upon.

The preferred form of stop is illustrated in the accompanying drawing. In this drawing: Fig. 1 is a side view of a portion of a planing machine showing the attachment applied thereto, the contacting dogs employed being shown by full lines in the positions assumed prior to the introduction of material to be operated upon, and by dotted lines, the positions of the dogs when in operation. Fig. 2 is a plan view showing a portion of one side of a planing machine, the means for securing the attachment in place for use, and a portion of the dogs employed. Fig. 3 is a side view of a section of the shaft on which the contacting dogs are mounted. Fig. 4 is a side view of one of the contacting dogs, and Fig. 5 is an end elevation of one of the dogs.

In the drawing 1 represents a portion of the side frame of a planing machine; 2 represents the work table; and 3 represents the feed roller by which the work is drawn into the machine. Arranged above and extending transversely of the feed table, and held in a manner to have a limited swinging movement, are a series of contact pieces or dogs 4 extending entirely across the work table. Each dog is composed of a body 5 which is triangular in general contour having a curved toothed lower end, a neck 6, and a hub 7. The hub has formed in one side a tapering indentation 8, and extending from the opposite side is a projection 9 which corresponds in size and shape to the indentation. When the dogs are arranged in close relation to each other as in use, the projection from the hub of one dog enters the indentation in the next adjacent dog and thus all the dogs are maintained with their bodies in alignment.

The preferred form of support for the dogs is shown particularly in Fig. 3 of the drawing. This consists of a hollow shaft 10 having a longitudinal slot 11 in the wall thereof, the width of the slot being somewhat greater than the size of the necks of the dogs, and the interior opening in the shaft being of a size to snugly hold the hubs of the dogs while permitting of their free swinging. In assembling the parts the hubs of the dogs are introduced into the open ends of the shaft and brought into close contact with each other, with the projection from each hub entering the indentation in the next adjacent one. The contacting faces of the indentations and projections are smooth, permitting free independent movement of the dogs and thus allowing the contacting of the different dogs with the upper faces of work on the work table, of different thicknesses. When the dogs are arranged on the hollow shaft the necks 6 of the dogs extend through the opening formed by the slot 11, and the difference in the widths of the slot and the necks may be such that any predetermined extent of movement of the dogs independently of the shaft may be permitted.

In mounting the attachment the ends of the shaft 10 are secured to the sides of a planer or other machine in any suitable way, being preferably held by detachable brackets of a construction permitting the ready raising and lowering of the shaft to adjust the height of the dogs to permit the passage beneath them of material of different thicknesses, and to compensate for wear on the dogs. The mounting herein shown is composed of standards 12 adapted to be secured to the sides of a machine, and brackets 13 secured to the standards and capable of vertical adjustment. Extending through openings in the standards are bolts 14 the head portions of which are received by vertical T-shaped grooves 15 in the brackets. This construction allows the quick elevation or depression of the brackets and of their being firmly held in place by the binding of the nuts 16 on the bolts against the faces of the standards. Each bracket 13 has in it an opening 17 into which the shaft 10 projects, and when the position of the shaft in respect to its longitudinal slot is determined, the shaft is secured by means of the set screws 18 passing through the brackets and bearing on the shaft.

One or both ends of the shaft has secured in it a plug 19, the outer end of which is angular in cross section, so that by loosening the set screws and applying a wrench to the plug the shaft may be turned to bring the slot in the shaft to a position properly to position the dogs carried by the shaft.

In the use of the attachment material to be operated upon is pushed into the machine and as it contacts with the dogs the latter are swung inward and are held by gravity to bear with the ends of their curved toothed faces on the upper face of the material. The thickness of the material allowed to be introduced is determined by the position or width of the slot in the shaft through which the necks of the dogs extend, the admission of work too thick to be properly operated upon by the machine being checked by contacting dogs with the edge of the slot in the shaft causing the dogs to act as a barrier against the introduction of the material. With the dogs resting on the upper face of the work as described, any back movement induced by the operation of the machine will cause the dogs to turn on their hubs bringing the curved toothed ends of the dogs to positions instantly to bind the work to the work table and thus prevent ejection of the work from the machine.

This device is now being applied to the planers manufactured by Baxter D. Whitney and Son, Inc., but is just as suitable for other types and makes of machines. The inventor is James Roberts, Canadian sales manager for Baxter D. Whitney & Son, Inc., Mattison Machine Works and Jenkins Machine Co.

General Machinery Company Agents for Elliot Woodworker

The General Machinery Co., 67-69 Frederick St., Toronto, have been appointed Toronto agents for the Elliot Machinery Co., Limited, of Belleville, Ont., the makers of the well-known Elliot combination woodworkers. They report a good volume of sales of this machine, especially to contractors, and they are laying plans in anticipation of heavy sales this spring. The General Machinery Co. will also handle of course, the other machines made by the Elliot Co.—the floor sander and the new No. 7 woodworker and jointer.

Upholstering and Trimming

Where Comfort Counts

A Lounge Chair is a Piece That Demands Soft and Pliable Upholstery

The piece of furniture illustrated in Fig. 208 introduces into our consideration of the details of modern upholstering the chaise lounge, a type not yet referred to in the series, but embodying in its construction practically the same principles as have been explained in connection with pieces already described.

It will not, therefore, be necessary to carry the reader through the successive stages in the matter of upholstering the piece illustrated with the same minuteness of detail as has been followed where a new piece illustrated required instruction in upholstering methods not previously described.

The reader should be by this time familiar with the preliminary processes of upholstering, and in the case of the frame shown in Fig. 208A would know immediately how to accomplish the processes of webbing, springing-up, covering with burlaps, building the stitched edge and covering with muslin up to the point indicated in Fig. 209.

These processes are shown progressively in Fig. 210, this latter figure being self explanatory.

The upholstering of the arm and wing follows methods previously described in connection with wing chairs and is only superficially indicated here in order to recall the methods suggested.

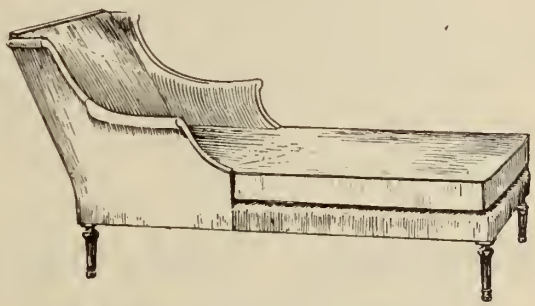
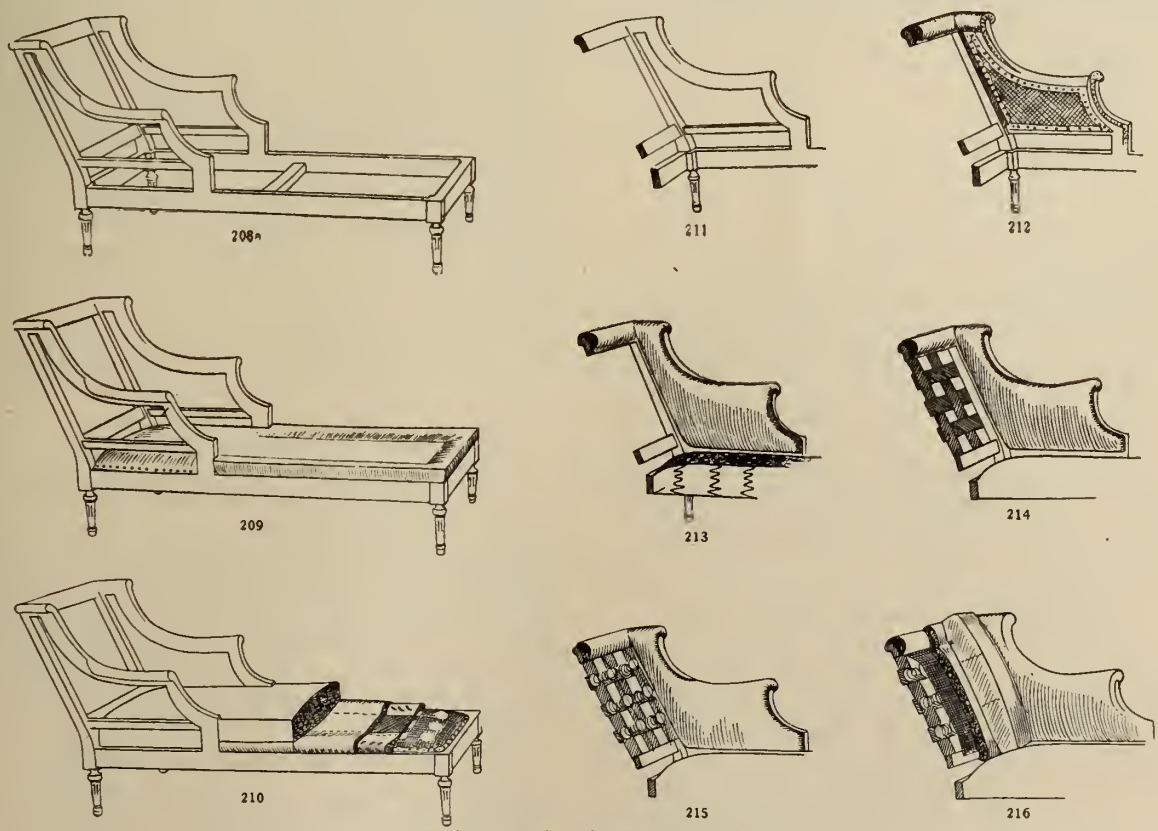


Fig. 208—The chaise lounge, the upholstering of which is described in this article

Fig. 211 shows the frame construction in skeleton with one half cut away in order that the various stages of upholstering may be easily followed. The first operation is the construction of the nosing around the edge of the wing and the inner edge of the



Successive operations in the upholstering

front post of the arm containing no new principles from those described in connection with Figs. 94 and 95 (in a previous instalment of this series). A soft roll is also provided at the top rail as indicated in Fig. 212.

The next step is the upholstering of the arm and wing up to the muslin stage indicated in Fig. 213. Fig. 214 also shows the webbing of the back for springs, this particular piece calling for three rows of three springs each, nine in all, and tied down to a height of about four inches, as shown in Fig. 215.

The springs are then covered with burlaps and over the burlaps is laid a soft padding of hair which is covered with muslin, the muslin being stitched down across the line marked X in Fig. 216, thus providing a slight swell over the pillow which fits the shape of the down cushion and prevents the leaving of a gap in the same way that the nosing of the seat is slightly raised so as to compensate for the curve of the under side of the cushion.

The construction of the down cushion for both seat and back follows the methods previously described in connection with this series, the seat cushion being loose and shaped to the space between the arms while the back cushion extends down to the foundation of the seat and is back-sewn to the under upholstering on the depressed line marked X in Fig. 216.

Too much emphasis cannot be laid on the necessity of keeping the upholstering of such pieces as the one here illustrated, soft and pliable in order that the greatest degree of comfort may be maintained. This does not, however, mean that what in trade parlance is termed "sloppy workmanship" is permissible. It is a nice accomplishment to maintain the requisite degree of firmness with the proper down resiliency and it should be borne in mind always that comfort in furniture of this type is of greater necessity than extreme wear resisting durability. Furniture of this type is seldom abused and is purchased for its luxury rather than for strict utility.

Keeping Tab on the Incoming Stock

How Cover Records Should Be Filled in and Filed—Inspection of New Goods Facilitated by Special Machines—The Storage and Care of Upholstering Goods

Most factories keep cover records in the cutting department. This is wrong, since they are really a part of the purchasing department and should be kept in the general office. Otherwise a duplication of work is unavoidable and a decentralization of purely administrative work takes place.

Modern management runs the factory from the central office. The purchasing agent should have a card index of all coverings showing the following data on each pattern:

Number of goods.
Name of manufacturer.
Price and grade.
Nearest substitutes.
Amount of order; when ordered.
Amount received.
Amount used on each order.
Amount on hand.

Each order should be posted showing the amount needed for each job. Such a card index is a perpetual inventory combining all necessary information in a simple and easily readable form. As soon as a certain pattern runs low—to ten or twenty yards—it is necessary to verify the stock by actual measuring. If any mistakes are made or too much cover is used it is then found out, traced to its source and corrected. These records are of the greatest value to the buyer, showing him at a glance which goods are selling and which are not.

Examining Incoming Goods

In order to avoid contested claims later on, it is of the greatest importance that all incoming goods are immediately inspected for defects and also remeasured to verify the yardage on the invoice. In most plants this is done by men who are experienced and fully capable of judging the texture, quality of color, etc. The material is unrolled and carefully inspected. After the inspection has terminated the material is re-rolled and again unrolled for the measuring and finally placed in stock. If defects are found, the attention of the management is called to such goods. This old way of handling incoming goods is a rather cumbersome and time-wasting procedure. Modern factories should employ inspecting and measuring machines described above in one. Such technical helpmates are now on the market and can be built and their speed gauged to allow a thorough inspection of the goods while being unrolled and the measuring is being done at the same time automatically, the amount of yardage showing on a dial. To faciliate the inspection for defects in the texture a powerful electric light can be arranged to play upon the back of the goods when being enrolled. It is plain that the use of such a machine saves considerable time and labor and its installation pays for itself in a short time. In addition to time saving, another feature of great importance is worth while considering:

The goods can be marked every one, two or five yards. Every manufacturer who has imported tapestry from Europe knows that the firms abroad send their goods with a tape measurement on the back of the material. This is a marked improvement over our domestic way, but unfortunately cannot be adopted and used on mohair and velour goods, since the slightest pressure upon the nap leaves streaks and other marks. On domestic tapestries this method can and should be adopted. There are no technical obstacles to marking the yardage when the goods are being woven, and a concerted action on the part of the furniture manufacturers could compel the mills to find ways and means to mark every yard on the goods during the weaving process.

Marks Facilitate Handling

Such a marking saves an enormous amount of time and handling, especially at inventory time. It would not be necessary to take every piece out of stock and measure and replace it on the shelves. If

each yard was marked right on the goods one glance at the roll would suffice to show the actual yardage in stock and could be read off to the stock-taker. This suggestion is worth while the attention of the furniture manufacturers' association and should receive careful consideration.

The actual cover stock should be kept in a moth-proof room directly adjoining the cutting department. Care should be taken to allow sufficient light and room between the cover racks to allow two or three men to move between them without interference. The racks should be built on a slant to allow an easy handling of rolls. Special cover trucks high —with cut-out on top and sides roomy enough for rolls of average length and thickness. Wherever possible conveyors should be built, running either underneath the cutting tables or under the ceiling, to allow the delivery of goods to the different cutting tables without disturbing the work of the cutters. The cover stock should be in charge of the party who inspects the goods. He is responsible for the correct handling and gives out the material to the different cutters.

For each piece of furniture is issued a working ticket from the general office, combining, of course, suites to be covered in the same material on a singie master ticket. After these tickets have passed throug hthe hands of the cover record clerk in the purchasing department, they are given to the cutting room foreman. He divides them into pieces to be covered in tapestries, velours or mohairs, and furthermore, into pieces calling for the same pattern or similar sized patterns. Tapestry suites in covers of nearly the same sized patterns can and should be cut in quantities by an electrically driven cutting machine. Certain velour patterns also allow cutting by machine, which means a considerable saving of time and can be done by a boy or girl after a little training.

After the cutting room foreman has divided his working tickets as explained above he marks on each the name of the cutter or marker to whom he intends to give this work. For this entry is left a certain space on the tickets and not only for the name of the cutter, but also to mark the actual yardage used. This entry is made by the cover stock clerk when the cutter is through with his job and returns the goods left over. This is a very important part of his duties and if properly taken care of works as a constant brake upon the cutter to be careful and economical. — By Rene Sulk in "The Furniture Manufacturer and Artisan."

In the Market for Dowels

A London firm of timber merchants are open to purchase best quality dowels, and invite quotations c.i.f. London from Canadian manufacturers for the following specifications: 20,000 1/4-inch by 36-inch; 20,000 5/16-inch by 36-inch; 20,000 3/8-inch by 30-inch; 20,000 3/8-inch by 36-inch; 20,000 7/16-inch by 30-inch; 20,000 1/2-inch by 36-inch; 20,000 5/8 by 36-inch; 10,000 3/4-inch by 30-inch; 10,000 7/8-inch by 36-inch; 20,000 7/32-inch by 36-inch. Best quality smooth birch dowels, free from knots required. Name and address of inquirer may be obtained from the editor of this publication. Refer to inquiry No. 1258.

Coatings that Prevent End Checks

Wood dries more rapidly from the end grain than from the side grain, and is apt to check and split during seasoning unless end drying is retarded by some means. For this reason it is advisable to use a water-resistant end coating on wood during air seasoning or kiln drying, especially on woods which are difficult to dry and on short kiln samples.

A report issued by the Forest Products Laboratory, Madison, Wis., states that the coatings ordinarily used can be divided into two classes. The first are liquid at ordinary temperatures and can be applied cold. The second are solid at ordinary temperatures and must be applied hot. Cold coatings have the advantage that they may be used as easily on logs and lumber as on kiln samples and dimension stock; hot coatings, because of the method of application (end dipping), are not easy to use on large stock.

Either the cold or the hot coatings can be used effectively for drying temperatures up to 140 deg. F. Temperatures much above this cause blistering in the cold coatings, but make the hot coatings plastic enough to form new surfaces as fast as the old ones break. For this reason the hot coatings are apt to be more effective than the cold coatings for temperatures from 140 up to 170 degrees F., where they liquefy to such an extent that they run off. No coating has been found which is entirely satisfactory for temperatures above 170 degrees F. Cold coatings are perhaps somewhat better than hot coatings for temperatures above 170 degrees F. and for use on kiln samples when the temperatures are high enough to cause the loss of part of a hot coating.

Effectiveness of the Coatings

Cold coatings to be effective should have about the consistency of heavy syrup. The amount of filler required ranges from two to four parts by weight to one of the vehicle. Cold coatings used at the Forest Products Laboratory have been found effective about in the following order, the most effective being placed first:

Hardened gloss oil and air-slacked lime— (Oil evaporated to consistency of thin syrup before adding the lime) ..... Very cheap
Chinawood oil and barytes ..... Cheap
the felt is greatly faciliated thereby. If he cleans off heavy) .... Moderate cost
Linseed oil and red lead (very heavy) Moderate cost
High-grade spar varnish and barytes .... Expensive

The hot dips were effective in the following order:

213-degree coal-tar pitch ..... Cheap
254-degree coal-tar pitch ..... Cheap
Rosin and lampblack (100 parts of rosin to 7 parts of lampblack) .. Moderate cost

Some asphalts are highly moisture-resistant, but they are hard to apply because of the high temperatures required to make them plastic.

Paraffine has proved very satisfactory as an end coating for stock during air seasoning, but cannot be used in the kiln because of its low melting-point

Excessive shrinkage of the wood and rough handling often cause the end coatings to chip or shear off, and a fresh application of the coating must be made.

To reduce end-drying sufficiently there must be a thick coating over the entire end surface. When hot dips are used, the wood should be dipped half an inch into the liquid.

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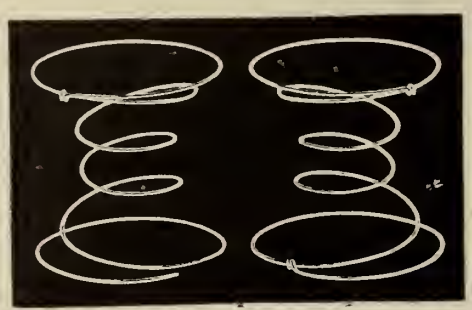

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Rubbing and Polishing

The Proper Methods of Carrying Out These Operations, Which Produce Entirely Different Finishes

Today it is said that a furniture finish when done in varnish is not complete unless it has been rubbed. The application of varnishes alone, whether by spray or brush, will cover the wood, but it is a long ways from a finished job. Rubbing and polishing are important branches of finishing. While the two processes, "rubbing" and "polishing," produce entirely different finishes, yet their methods are interwoven, so we speak of them mostly in conjunction. In a recent issue of "The Furniture Manufacturer and Artisan" Walter K. Schmidt describes these two processes and the proper methods of applying them.

It is always taken for granted that the varnish applied has been one particularly adapted for the subsequent treatment; thus, the specifications for a rubbing varnish are usually for one that dries within a certain specific time and then will permit of rubbing. The same is true with the polish.

We are not doing as much polishing these days as formerly. This is now mostly confined to the piano and instrument trade where high gloss finishes still prevail. Then, too, in some furniture where a gloss is permitted on furniture, it is rarely one produced by polishing; it is rather one in which the polishing varnish is allowed to dry in the natural way. It might be given just a bit of polishing to knock off the dust, but never as much as on instruments or pianos. The rubbing of the varnish and the subsequent rubbing down with pumice stone today is given more consideration. In fact, more so where we have learned that the application of thin coats of varnish are more durable than in the old days when we applied rather heavy varnishes and several coats.

Proper Sanding Essential

We have often laid particular stress upon the necessity of a properly sanded surface, and as one follows through the recommendations for rubbing and the impossibility by the use of thinner coats or thinner varnishes to overcome any defects that might be in the original surface, it will readily be seen that the more care taken in the original preparation in securing an evenness of surface, the better will be the result when the last rubbing coat has been applied.

Different finishers have different ideas and different ways of doing things, but one must always take into consideration that very few factories are producing the same style of goods and rarely are they using the same materials. After the shellac coat has been prepared and a coat of varnish applied one finisher may give it a bit of rubbing in order to produce as he says, a level surface, but to the writer's idea this is dangerous. He may cut through to the bare wood.

Coarse grained woods are apt to require three coats of varnish. Then one must remember that rubbing is done with pumice stone and there is the cleaning off to be looked after. In the old days when we applied varnish heavily it was sanded down level, thoroughly dusted, and possibly the final coat applied. But we had plenty of varnish to sand off, and when the final coat was applied it had a level coat of varnish underneath. In the modern way the use of thin varnishes gives just as good results where the original surface is absolutely level, and the original surface to which the varnish is applied is a smooth shellac coat. Then very good work can be done with two coats of varnish.

There are a few rules which when once mastered will govern practically all of the hand rubbing process. Never rub crosswise of the grain. This is the same as in sandpapering. It is very apt to give a scratchy appearance. Always rub with an even stroke. The same pressure from beginning to end avoids cutting through the edges. It is self-evident that varnish should never be rubbed when it is not perfectly dry. Use the best pumice stone. A coarse powder is dangerous, even in the most experienced hands. A novice at the business will tire himself out in the first half day. He will use too much energy so that the work done in the morning will be rubbed too hard, with the possibility of disleveling and cutting through the edges, and in the afternoon the work will be blotchy because the pressure has been uneven. The work is done with rubbing felt of various sizes, usually about the size of a postcard and about an inch thick, and naturally smaller pieces where panels are to be rubbed. If a good deal of paneling is to be rubbed, the writer has found it expedient to prepare a wood negative shaped and glue thereon a thin piece of felt and use for a rubbing pad.

Rubbing Done with Water

Rubbing is done with water or with rubbing oil, which is paraffine oil of the lighter grade. This oil should never be darker than a pale amber, otherwise it is too heavy and very difficult to clean off. Rubbing with water requires more rubbing than with oil, as the pumice does not seem to cut so quickly. It is customary to sprinkle the pumice stone on the surface from a tin can, the cover which is prepared like a pepper box. This spreads the pumice evenly over the work; but many prefer to moisten the pad with water or oil and then dip it into the box in which the pumice stone is contained. There should always be a sufficient quantity of the liquid present. Attempting to rub when the pad is getting dry usually produces some difficulty.

If goods are to be polished they first should be rubbed down smooth with water and medium coarse pumice stone, using felt as a rubbing block. Plenty of water should be kept on the work to prevent the varnish caking on the bottom of the block. No matter how careful one may be in this respect, some varnishes will harden on the bottom of the felt, and if

not removed, will scratch and tear the surface. The expert rubber instantly can detect this gathering of varnish on the felt from the feeling of it as his hand draws over the surface. This caking is more liable to take place where the varnish is not quite hard, but will take place with some varnishes, no matter how thoroughly hardened they may be.

Two Grades of Pumice

If there are four or five coats of varnish on the goods to be rubbed it is well to have two grades of pumice, one grade somewhat finer than the other to finish off with. If one attempts to rub down four or five coats of varnish with one application of pumice, he will find before he gets through that there is too much of the varnish mixed with the pumice to enable him to make a good job, and that caking on the felt is greatly facilitated thereby. If he cleans off this mixture of ground varnish and pumice and starts to finish off with a second application of pumice of the same grade, he will find the work so badly scratched that great difficulty will be experienced in getting it in shape for polishing. If fresh pumice is required after the rubbing is nearing completion, a fine grade should be used.

The felt used for rubbing with pumice is a coarser grade than that used for fine rubbing and may be obtained from one-quarter inch to two inches thick, the latter thickness being preferable for heavy rubbing. It is made in various degrees of firmness, a medium hard felt being the best for this work. Some rubbers, if the work is very heavy, will start to cut down with burlap, using this until the job is about half rubbed ,then using the block and finishing off with a piece of thin felt. Burlap will hold the pumice better and cut a little quicker than the felt, but the work is not so fine and the felt must be used afterward.

If the varnish is fairly hard at the time this first rubbing is done, the fine rubbing may be proceeded with at once. If it is not too hard, it should be allowed to stand from twelve hours up, according to its condition, to give it a chance to "sweat" out and take on a hard surface on which to do the fine rubbing. While the fine rubbing in this case is done in the same way as on pianos, yet the object to be attained is somewhat different. When rubbing a flow coat of varnish there is a certain amount of grit to be rubbed off, and while doing so, one must keep the surface in condition for polishing. In the case under consideration, where one is fine rubbing a surface that has been coarse-rubbed, the object is to prepare the surface for polishing by removing all the scratches made by the pumice. From twelve to twenty four hours should always be allowed between the fine rubbing and the polishing to insure a durable finish. A longer time than this may be necessary unless the varnish is fairly dry.

In the opinion of the writer, the modern method of polishing is in every respect equal to the hand polishing still in vogue in some piano factories. Of course, in the modern method a great deal depends on the composition of the liquid used in the process. There are many formulus for making polish, but the following is one that has been tested for several years on high grade work. It produces a very high and durable polish with a minimum amount of labor.

1 gallon paraffine oil.
1 gallon pure turpentine.
20 ounces oil of cedar.
12 ounces oil of cintronella.

The longer this polish has been made before using the better it will do its work. It is used in connection with rotten stone in the ordinary way with a pad. A very soft cotton waste makes an ideal polishing pad. This polish is improved by the addition of a little water, but it cannot be mixed with the polish. Take a small handful of the cotton waste and thoroughly saturate with water, then wring as dry as possible. Rub this damp cotton waste over the surface to be polished immediately before commencing operations. This will supply the required water.

Start at the Ends

If a plain surface like a table top is to be polished, one should start at the ends, polishing these crosswise. This crosswise polishing is necessary in order to be sure of a high polish out to the extreme ends, and it must be done at the outset, otherwise the cross polishing will leave a mark. This polishing is not done with circular motions, the way French polishing and hand polishing are done. The motion is a straight stroke extending from one end to the other of the surface polished.

After the polish has been brought to the highest point possible by this process, its brilliancy may be deepened by rubbing rapidly with the bare hand, using the least possible quantity of polish—just enough to prevent the hand sticking to the varnish. Rub with a circular motion, the same as when hand polishing.

Clean the polish off with a soft cloth moistened with alcohol. The greatest care must be exercised in doing this. Have but a small quantity of alcohol on the cloth and go over the surface very lightly, using a circular motion. If there is too much alcohol on the cloth it is certain to burn into the varnish and destroy the polish. Sprinkle a small quantity of the alcohol on the cloth and twist it up tightly. This will allow the liquid to spread itself throughout the whole cloth and reduce to a minimum the possibility of burning the varnish.

Furniture That is Painted

The Growth of the Use of Color and the Present Tendency to Popularize it in the Old Country

By P. A. WELLS*

We know that some sort of colour has been used as a decoration from the very early days. The Egyptians were wonderful painters. The Greeks did a little, but we know that the tradition of using paint as a medium for brightness and colour has come down from the earliest centuries, and has been taken up in very special ways by certain people, particularly the Tyrolese, whose work is most highly decorative from the point of view of colour and paint.

The Norwegians were very effective in treating woodwork with paint. Of Norman woodwork we have very little record in this country (England); in fact, it is almost impossible to put one's hand upon a piece of actual Norman woodwork other than the great oak roofs, or anything other than the actual building. I do not know of any piece of Norman furniture I can point to which exists today.

But when we come to the thirteenth and fourteenth centuries we begin to get real painted furni-

*Lecture delivered before the Incorporated Institute of British Decorators

ture and woodwork. We read of Henry III. giving an order to the painters and builders to provide a little chamber which should be panelled and painted green and bright.

Early Painted Furniture

I suppose that some of the oldest pieces of painted woodwork are to be seen in Westminster. In that wonderful book that Professor Lethaby has written on the Abbey he gives some very interesting facts about the work. The Coronation chair is probably the oldest piece of painted furniture that one could look at. It must have been a very elaborate and gorgeous piece of furniture when it was finished, painted, gilded and gessoed. Then there is a very fine piece of painted woodwork in the Sacrarium Sedelia. Professor Lethaby gives us some account of the "Painters' Guild," which must have been at that time quite a powerful one.

The fourteenth and fifteenth centuries were the great periods for painting. At that time there was not much movable furniture in the house. Just a table or a chest. Chairs were very rare. In the fifteenth century we come to the time when the screens, the roofs and the church furniture were painted and decorated in gold, gesso and bright colours. I have often wondered what these places looked like before the Reformation. The glorious roofs, the screens, dazzling with color and gold. I have in my mind one or two roofs which I have seen during my journeys through Norfolk and Suffolk. There is a specially interesting one at Salt, near Aylsham. Directly I entered this great church, in a little out of the way place, I sat down completely bewildered by the beauty of that wonderful roof, which is still in a very good state of preservation. I believe the methods in those days were to use pure colour, and it was customary when they were painting a panel particularly to build up the body colour with a series of some six coats of white paint, one on top of the other. The records do not give any instance of being rubbed down, but probably they were able to get a surface by what seemed to be the principal method of putting one coat on very thin, and building it up to make that body colour for anything that came after, particularly if the panels were pictures of saints. The favorite colours were red and green, picked out with gold.

There was not much colour used after the Reformation; in fact, during the sixteenth and seventeenth centuries it is very, very difficult to find any English work that was painted, but here and there in our museums one comes across attempts at colour work in an old chest or cupboard. But the art and craft of colour decoration in furniture seems to have been dropped after the Reformation, and it is only when we get to the eighteenth century that paint as a decorative medium comes again to the front.

I need hardly mention, of course, the great artists and painters of the eighteenth century, particularly those to do with painted woodwork and furniture. I must, of course, refer particularly to Robert Adams, and to the artists he brought over from Italy. But work must have had a wide influence up and down quite apart from this classic example, Adam, his the country. As one goes about one is continually coming across examples of painted furniture, either well or badly done, very simple or ornate, designed and made by the country furniture makers who got the painters to decorate it in the London way. There is an interesting example in the South Kensington Museum, in the suite of furniture which was made by Chippendale's firm for David Garrick. It is painted in cream and decorated very largely in the Adam style. We get chairs, tables and cabinets of all types being painted in that particular way, and, as you know, at that time, when rich satinwood came into use, it became the work of the greater artists, Angelica Kauffman principally, to paint these examples and decorate them in their own way.

Modern Painted Work

Coming to modern painted work and furniture, I think the revival of colour, even in furniture, has practically resulted from the aftermath of the war. There has been a tendency to use a bright colouring, not only in furniture, but in other directions—in wall paper, in textiles, and so on. Whether our desire for colour has been real, or whether it is just a passing phase, has yet to be established, but the fact is this, that up and down the country there has been during the past two or three years a great deal of painted furniture being done.

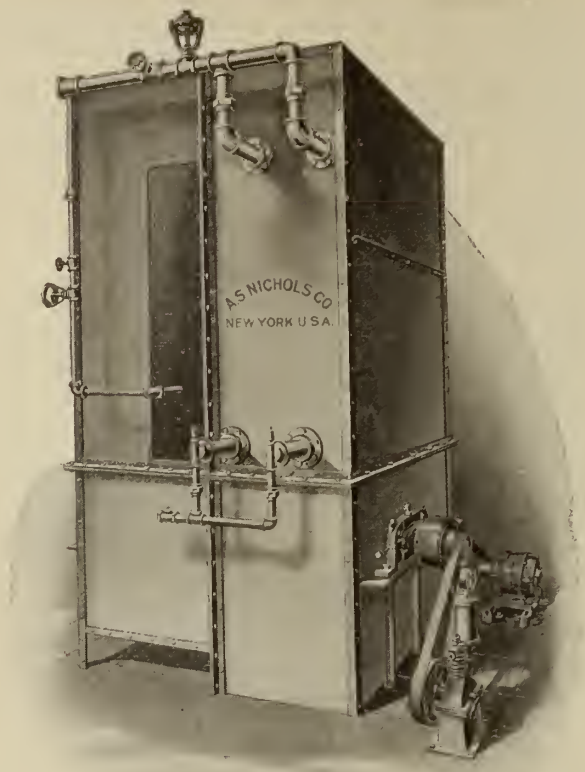
We began to make experiments at Shoreditch for one particular reason. We wanted to see if we could brighten up furniture a bit, particularly the cheaper sort. We wanted to get rid of the sham mahogany, walnut and oak, and so we turned to paint as being a perfectly honest medium for finishing, and we made a complete set for a five-roomed cottage. We have, of course, gone beyond the stage of experiment now. We adapted the old method of combing in color. It is done by simply making a ground of one color, and laying another coating on the top of it, and before it is dry combing through it. You get such extraordinary variety in it, and changefulness is always interesting in a design. That little set of furniture has been all over the country to show people just what can be done in the way of construction and simple construction and simple decoration.

There was a certain refreshment room which was considered to be depressing and dull. It was thought that people should take their lunch in a brighter atmosphere. We changed the color on the walls and also the color of the curtains. We designed twelve tables, each of a different color. There was an Indian red, a bright green, a grey, a vermilion, primrose, yellow, French blue, and so on. The tops of the tables were rimmed round with the same color. The four chairs at each table were painted a French blue, and picked out in white, and the legs of the tables were chamfered, and also picked out in white. We got some blue and white cloths, and we found the proper sort of little pot to put on the table. The result was thoroughly satisfactory. The paint we used was Japanol, one thin coat and one finishing coat, and the paint stands today in very good order.

Furniture Trade Receptive

Quite apart from this type of experiment the furniture trade is taking up paint as a material very seriously, and I would like to see this more employed. It is now past the stage of experiment. At the recent show at South Kensington, where there was a bedroom suite of furniture exhibited by Messrs. Heal & Son. Ambrose Heal is a pioneer in painted furniture, but quite apart from the color of the hangings round about, the set of furniture was very delightful indeed. At Birmingham, not long ago, I saw a suite of furniture in a dark orange, picked out in

(Continued on page 94)



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Veneers and Panels

Giving Veneered Stock Time to Dry

Chances Are Often Taken with the Result that Defects Develop—Dryers Assist in Handling Large Output Expeditiously

By A. M. HALL

There are always men ready to take a chance on anything, particularly if the experiment is not going to cost them anything personally. I have in mind at the present time a shop I was in recently, a piano factory to be exact, in which the foreman of the veneering department told me of a joke that had occurred a short time before. He said when they went to check up the veneered parts in their drying room they discovered they were short a pile of tops. There should have been four complete batches of cases in this room, but their investigation revealed that one of the batches had no tops.

The veneer foreman was a good friend of the machine room foreman and, of course, he told his friend about the discrepancy so he could fix it up. You see the machine room had bungled in some way and had evidently counted one batch of tops twice, or something of the kind. The suggestion made by the veneer room was that if the machine room put the tops through in a hurry they would stick them in the press and rush them through and no one would be any wiser. This was done, and the tops were only in the pile two days when the trim sawyer removed them to cut them up for the finishing room. He saw they had only recently been veneered by the condition of the glue, but when the joke had been repeated to him he laughed with the rest, and away went the green tops.

I never heard the sequel to this joke, perhaps it hasn't happened yet but if those tops go through without giving trouble then the days of miracles are not over yet. The joke was certainly on the owner of the plant, and the incident shows how far men will go to cover up a blunder. The first thing they did when they learned the tops were definitely among the missing was to measure up and see if they couldn't switch one of the batches in the drying room, but the fact that the sizes were different precluded anything of this nature being done. The next move then was to take a chance on putting the tops through with only two days for the veneer to dry out.

Essential to Watch the Drying

One of the essential things to watch around a plant doing veneered work is that all stock has plenty of time to dry, and yet these men would violate one of the first principles of the job in order to cover up a blunder, a blunder that would most likely have been forgiven without any comments. No manufacturer expects his foremen to be the kind who never make mistakes, and if the situation had been put up to him frankly plenty of time could have been allowed for getting out the tops and getting them dried simply by rearranging the schedule of cutting up the batches.

After this incident, and one or two others I have heard about, when I hear about some defective work that crops up in a plant I am skeptical about how it happened, and if I were operating a plant I would make it a point to sift every case of defective work right to the bottom. I might not find out the real cause of the trouble, but I would throw a scare into the gang that would make them think twice before trying to slip anything over. I do not mean to insinuate in this article that all faults in the veneering business are due to blunders and attempts to cover up these blunders by men in the plants, but my business has taken me into intimate contrast with a great many veneer rooms and some of the things I have heard there have made me do some wondering.

One incident that I recall in particular had to do with a new apprentice. He had been told to put some glue to soak in pails used for the purpose, and on attempting to empty the glue into the heater afterwards he found it rather difficult to separate the soft glue from the sides of the pails. One of the older hands innocently suggested to him that he grease the sides of the pails as this would prevent the glue from sticking and would make it very easy to remove. It may have assisted the removal, but it was the cause of a good deal of trouble afterwards with loose veneer. This incident is still told with great glee in the veneer room where it occurred. It is one of the legends of the plant almost.

Mechanical Dryers Speed up the Work

But to get back to the rushing of veneered work through the plant. Frankly, it can't be done. There are certain forms of mechanical equipment on the market now-a-days to assist in drying which undoubtedly help to cut down the time for drying, but where the old methods are followed you cannot rush the drying. I think this also applies to the modern driers. They should be given time to do the work properly. I have heard of users of this kind of equipment trying to beat the time specified by the makers as being right and proper for the equipment to do the job properly.

Often the desire to cut the time between the shipping room and veneer room starts right at the veneer room and shows itself in a tendency to cut off a day or two between operations all along the line. A day or two is cut out between the laying of the crossbanding and the face veneer. After this the drying time is cut a few days, thinking a few days will not matter, and so on all through the manufacturing operations.

The only way to know that you are going to get good veneered work is to take no chances. Do not try to rush any of the operations because if you do you will only be inviting trouble. The first of these is warping. If veneered panels are not given time to dry properly under the proper conditions

they will most certainly warp. The cause of warping is in the wood and must be eliminated before the danger of warping is passed. The moisture in the wood must be extracted and the extracting cannot be done if the stock is rushed through and some coats of finishing material applied to it before this moisture is properly eliminated.

If stock must be got through to the shipping room in shorter time, then there is only one way to do it and that is by putting in a mechanical dryer of an approved make. Be sure to find out from the manufacturers what the dryer is supposed to do, and do not attempt to better their claims. In some cases this would be next to impossible, but generally speaking makers of good equipment are conservative in their claims for their goods. The fellows who paint too rosy a picture of benefits to be gained generally have something that does not do all that is claimed for it and consequently they are forced to resort to high pressure salesmanship.

There are many types of dryers for veneered stock, and every shop should get one to suit their own particular requirements. I think the time has come when every shop should have a dryer, and the dryer they buy should be of sufficient capacity to handle their whole output. It takes a long time to properly dry veneered stock in the open shop; too long in fact to insure good work in a factory with any considerable output and with up-to-date equipment in the other departments, because of the large stock that would have to be carried. A good kiln will reduce the time required to do the work of drying plywood, from weeks to days, and to the same extent reduces the temptation to rush stock ahead before it has been properly dried as is the tendency when the drying is done by allowing the stock to remain in piles on the factory floor.

What is the Cause of Wavy Veneer?

Often Attributed to the Effect of Light, but in Reality It Is Due to the Sanding—The Cabinet Scraper is Considered the Best Tool for Preparing the Surface for the Finish

By S. A. L

At a recent exhibition of furniture two or three visitors were gathered around a buffet examining the top. They seemed to be finishers in some woodworking plant, judging by their conversation. Seeing their critical examination of the goods in the exhibit one of the manufacturers' representatives made his way over to them and listened to what they had to say. They immediately asked him what caused the wavy appearance to be plainly seen in the top. He scrutinized the top in question very closely and then announced that what appeared to be waves in the top were in reality nothing more or less than reflections caused by the lighting effects.

I was not one of the group discussing this wavy top, but the manufacturer's man aroused my curiosity by his reference to the lights being the cause. His explanation did not impress me as being the proper one, and since then I have made it a point to examine some of the furniture on the floors of retail stores just to see if that wavy appearance was present. My reason for this was that I had heard the same criticism once or twice before by mechanics who had been looking over offerings of furniture in stores.

Trouble Arises in Sanding

I have been doing considerable thinking on the matter and I have come to the conclusion that the cause of the wavy appearance is due to the belt sanding. If you take a top eighteen or twenty inches wide and sand it with a belt about four inches wide it must, of course, be sanded in strips, which is the practice in belt sanding. It will be seen, therefore, that it would be an easy matter for the operator of the sander to exert a little more pressure on one of the strips than the others. There might be a little rough spot that required a few more touches with the paper that would lead him to do this.

This, in my opinion, is the cause of the wavy appearance which is often to be seen on the tops of finished furniture. There may be no apparent ridges between the various strips sanded by the width of the belt, but I think there is a real danger of the belt ploughing a little deeper in some of these strips than elsewhere. This may be no great detriment to the finished product, and I am not saying that it is, but to my mind this is the cause of the waves. The light may be responsible in some measure, and probably is, because it would strike the deep and shollow parts differently.

A great deal has been written and said on the subject of sanding veneered stock. A number of men have stated their conviction that the cabinet scraper is the best tool for preparing the surface of veneer for the finish, and I am inclined to agree with them When a top for a dresser or buffet passes through the scraper it comes out perfectly smooth, and without any waves or suggestion of ridges, that is, taking for granted that the machine is in prope rcondition. A very light touch with fine paper is all that is then needed to put it in condition for the finish. By following this method a perfect job is obtained, and I venture to say if stock handled in this way was inspected after being finished there would be no waves apparent.

The three drum sander is the machine in most common use for preparing veneered surfaces for the finish, and when stock passes through this machine it very often leaves a great deal to be done on the belt sander. Thus we have the belt sander operator faced with the necessity of exerting considerable pressure on part of the work in order to accomplish what should have been done before the stock reached the belt sander. In many shops you will see a belt sander operator go over his stock with a fairly coarse paper, and then go over it again later with a fine paper. It may be possible to produce an absolutely level surface in this manner, but it certainly requires a very skilled operator to do it.

OAK MAHOGANY CIRCASSIAN MAPLE

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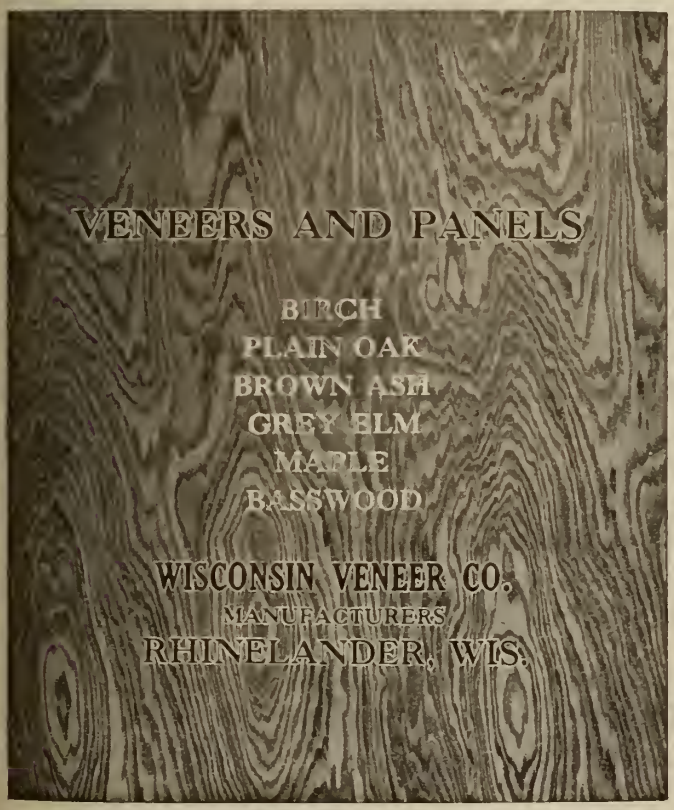

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We do not wish to see higher prices. Co-operation is the life of business at any time. At this time particularly you will find us as producers ready to co-operate in every way possible with consumers to ensure a steady supply of Walnut equal to the demand.

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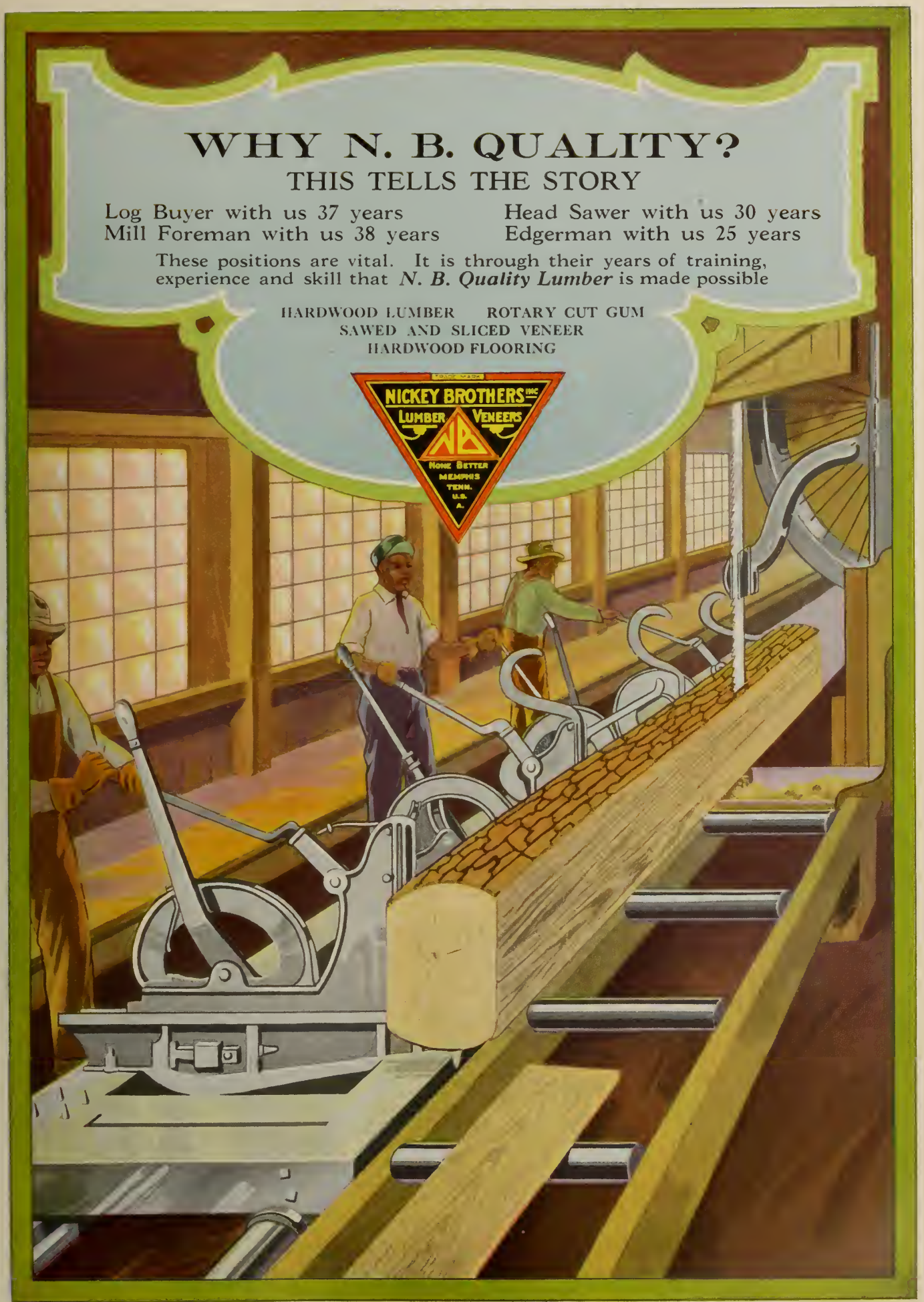
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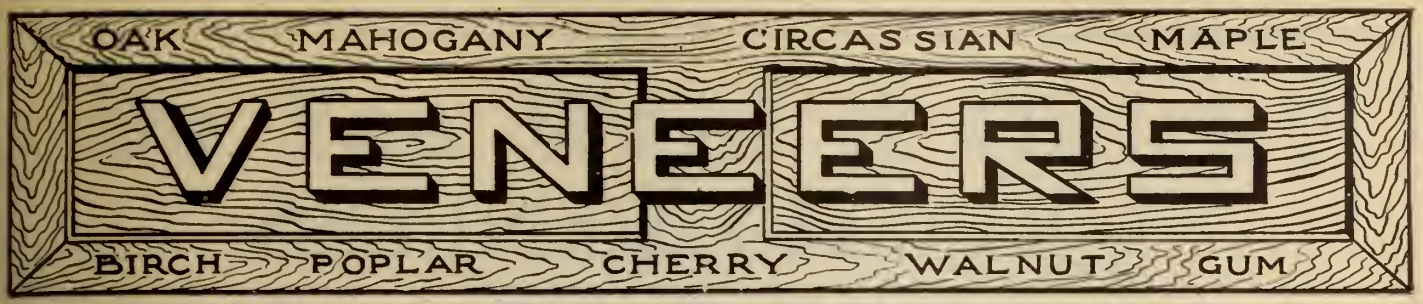

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PLYWOOD PANELS FOR EVERY PURPOSE

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CUTTING-ROOM: showing at the extreme far end (very small because of the distance) our huge 17 ft. Slicer; 6 Veneer Lathes ranged along the sides of the room and 4 Power Clippers in the middle space.

Photo by Hughes

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Woodstock - Ont.

Can High Temperatures be Overdone?

Case-hardening of Plywoods Results if the Moisture in the Core is Not Given a Chance to Vaporize—No Sure Remedy for Case-hardened Stocks—Sudden Cooling is Also a Cause of Trouble

In our anxiety to shorten the period between the time veneered stock leaves the press and the time when all danger of warping is passed, we are liable to overdo some things and overlook others, and one of the things we are liable to overdo is high temperature in the drying room at the time the stock enters, while we are apt to overlook the necessity of sufficient humidity. Every experienced drykiln operator understands the necessity of humidity in order to prevent casehardening of lumber, but all those who have charge of panel-drying rooms are not experienced drykiln operators, hence do not understand the importance of humidity; in fact, to many it seems absurd to talk about moisture in connection with a drying room.

For the benefit of any who may not fully understand this matter it might be well to point out why moisture in the drying room is so essential. If lumber is placed in a hot, dry atmosphere, the surface of the wood becomes warm, dry and hard before the center becomes warm enough to throw off any moisture. This condition is called "casehardened"—a hard shell on the surface through which the moisture on the inside finds it difficult to penetrate. Before the importance of humidity in drying lumber was fully understood it was quite common for drykiln operators to find it almost impossible to dry lumber at times. They would place stock in the kiln twice, and sometimes three times the usual period, and yet the stock was green at the center. I once had an inquiry about some oak lumber that had been thus treated, and advised giving it a prolonged steam bath to soften the outside and heat it uniformly through to the center, which was done with satisfactory results.

Kiln Air Must be Moist at First

When lumber is put in the kiln the process of drying should not start until the stock is uniformly warm through to the center, so that the movement of moisture will be from the center to the circumference. If the atmosphere of the drykiln is sufficiently moist to prevent evaporation of the moisture in the wood until the latter becomes uniformly warm through to the center, it will prevent this casehardening. After the stock is warmed through, the atmosphere may be made dry and the process of drying the wood commenced. There are two systems in use for drying the air of a drykiln, i.e., ventilation and condensation. Ventilation carries away the moist air, and keeps on carrying it away as the fresh air becomes heavily charged with moisture from the drying lumber. The condensing system condenses the vapors into water right in the kiln and carries the water away, leaving the air to take up more moisture from the wood. The condensing system is, by many drykiln operators, considered to be the more economical of the two, because it is not necessary to be continually heating new air, as practically the same air does the work.

The argument that applies to drying lumber applies equally to drying plywood. If plywood, fresh from the press and carrying its heavy load of moisture, were rushed into a drying room with a temperature of 120-degs. F., or higher, the face veneer would soon become dry and hard, while the core, which contains the greater portion of moisture, would remain wet, and the hot, dry air would keep the face veneer and glue hard and dry and prevent the vaporization of the moisture in the center of the core. Hence it is that many who claim to have perfectly dried their plywood because they have left it in a certain temperature for a certain length of time, have trouble with warping and cannot understand the reason. I have been puzzled many times when inquiries have come to me regarding warping of plywood whose owners insisted was perfectly dry. Many that understood thoroughly the essentials in drying ordinary lumber do not understand that the same rules apply to drying plywood.

No Remedy for Casehardened Plywood

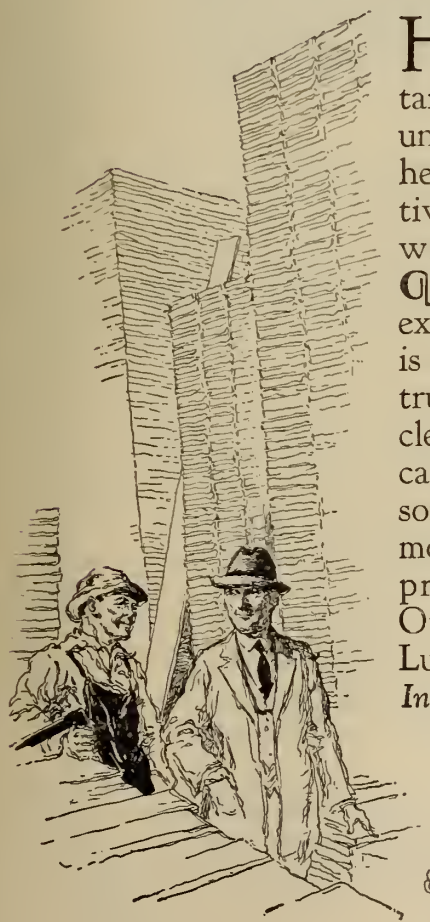
When plywood becomes casehardened it is much more difficult to effect a remedy than in the case of ordinary lumber, because, for obvious reasons, we cannot safely give it a steam bath to soften it. To be candid about the matter, I do not at the present time know any way to remedy casehardened plywood except to give it all the time it requires to dry out in the ordinary course. It might help some to start the drying process all over again without letting the stock cool off too much. Lower the temperature to about 80-degs. F. and raise the humidity by allowing a gentle jet of steam to enter the drying room for a few hours, then gradually raise the temperature and lower the humidity by either ventilation or condensation. I do not prescribe this as a remedy; I hand it out more as a suggestion to be tried out and experimented with by those who have casehardened stock, or stock which seems determined to warp in spite of all efforts to prevent it.

To prevent casehardening of plywood, start the drying process in a temperature not more than 10-degs. higher than the temperature in which it was built up. There is nothing about plywood to prevent starting in a moderately humid atmosphere, but the humidity must not be high. The temperature should be raised gradually to enable the stock to warm through to the center before the drying process gets under way. The highest temperature in which plywood should be dried depends on the kind of glue with which it is made. If animal glue has been used it would not be advisable to raise the temperature higher than 120-degs. F., but there are some cold-water glues that will stand as much heat as the wood will stand, and all of them will stand as much as animal glue. Any who contemplate drying at a higher temperature than 120-degs. F. had better take the matter up with their gluemaker before exceeding the above-mentioned temperature.

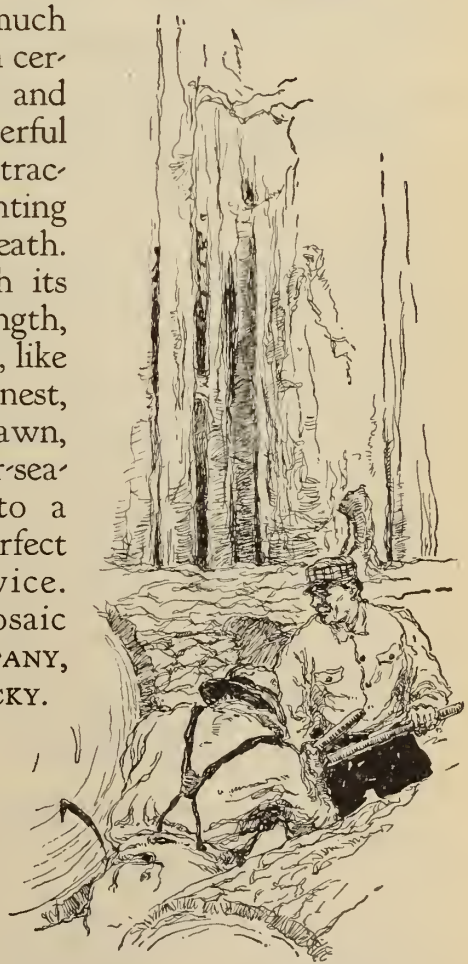
Where High Temperatures are Harmful

I am not an advocate of the high temperature in drying; at the same time I am free to admit that I

LOGS ARE LIKE PEOPLE



HAVE you ever noticed how much alike logs and people are in certain respects? ¶ Some rough and uncouth outside with wonderful hearts. Others "smooth" and attractive on the surface but disappointing when you discover what's beneath. ¶ Wood-Mosaic Lumber, with its excellent texture and sturdy strength, is cut from our own logs which, like trusted friends, are good, honest, clean all through. ¶ It is band-sawn, carefully manufactured and air-seasoned (kiln-dried if desired) to a moisture content that insures perfect preservation and better service. Otherwise it isn't Wood-Mosaic Lumber. WOOD-MOSAIC COMPANY, *Incorporated,* LOUISVILLE, KENTUCKY.



WOOD MOSAIC *Lumber*

do not think it is necessarily bad in itself; the harm comes from using a high temperature at the wrong time, or subjecting the wood to a high temperature for too long a period. Some woods will stand a higher temperature than will others. I have done some experimenting along this line and have found that some woods will char much more readily than others, and a temperature of 250-degs. F. will, after a few hours, char maple so badly that it can be crumbled between the fingers, and even a prolonged subjection to a temperature of 200-degs. F. reduces its strength. These facts point to some of the limitations in temperatures for drying woods, but I have formed the idea that wood finished off in as high a temperature as its nature will permit without perceptible harm will be less susceptible to atmospheric changes and to that extent less liable to swell and shrink.

There is one thing that should be guarded against, no matter what the temperature at which wood is dried; the wood should not be allowed to cool off suddenly. The temperature should be allowed to drop gradually, just as it is raised gradually. If wood is taken from a high temperature and placed at once in a low temperature we may look for almost any kind of trouble. It is always better to prevent trouble than to make trouble, then begin to look for a remedy. An ounce of prevention is better than many pounds of cure.—By B. M. Carl in "Veneers," Indianapolis.

Toothing the Cores Before Veneering

Can the Practice be Eliminated if the Stock is Run Through the Surfacer?—Scraper the Best Method for Toothing

By J. O. M.

There are still some plants where they persist in toothing all of their corestock prior to veneering it. Some of them accomplish this by putting toothing knives on the same planer head as the surfacing knives, while others use a separate surfacer with toothing knives on the cylinder. Others again employ the cabinet scraper, using a toothed knife in place of the ordinary scraping knife.

Of these three methods the scraper seems to me to be the best. By this method the knife is held stationary by a knife block while the stock is fed through the machine. With both of the other methods the toothing is done with a revolving cutter head and it is difficult to understand how a good job can be obtained. It seems to an interested party that the toothing knives would simply do some of the surfacing, and a poor quality of surfacing at that. It is not very clear to me how they would give the core stock any better preparation for the application of the veneer.

If cores are run through a three drum sander after they are planed the surface resulting makes a perfectly good one for applying the veneer to. A scraping machine equipped in the ordinary way also makes a splendid surface for veneering on, but if one has a good surfacer it seems a wasted operation to either sand or scrape after the work comes from the surfacer. The ideal surface to attach veneer to is one that is perfectly free from any unevenness. The modern surfacer achieves this result perfectly.

The idea, of course, of those who sand or tooth their stock is that it is necessary to roughen up the surface so the glue will get a better grip. Personally I would rather eliminate the toothing or sanding if the work was done on a good planer. If forced to choose, however, I would favor sanding.

The Lumber Market

Domestic Woods

Conditions in the lumber line remain encouraging, according to reports coming to the "Canadian Woodworker," and in spite of the handicap in shipping stock to the United States caused by embargoes at many points, trade is, on the whole, very satisfactory. Manufacturers point out that it will cost them much more to produce their stock this year. Wages in the bush were considerably above those of the winter of 1921-2, and at the beginning of the season men were inefficient and restless. Then again it is expected that there will be an advance in the wages of ordinary mill labor this spring of, perhaps 10 per cent, which will also run up the cost of production.

The chief difficulty with wholesale lumbermen at the present time is securing stock. It is no trouble to dispose of material at a satisfactory figure; the problem is where to lay hands upon it.

It is believed that the lumber business for the first few months of this year will be exceptionally active and that the cut for 1923 will break all records of the last three or four years. Everything betokens an expansion of production and confidence in the future. Supply and sawmill equipment firms are very busy, and several mills, which have been burned, are being rebuilt, all of which is an unmistakable omen of returning prosperity.

The industrial situation in Canada is not yet active but it is improving steadily and the domestic market in hardwoods which for a long period has been limited and listless, is expected to take on new activities during the coming few weeks. In maple, birch, elm and basswood, while there is no frenzied buying, the general demand is good and the advanced prices in many instances are being readily paid. Owners of small stocks are holding out for more money and say they will get it too.

In the meantime the outlook for the future is enlivening and everything betokens a large car business in all kinds of wood. The one danger is that of a runaway market before the new cut comes on the arena. It is predicted by some wholesalers that considerable material will be sold green from the saw, so pronounced will be the scarcity in certain lines of lumber.

One leading operator stated the other day that if values went too high, the whole market would be upset very suddenly as people were nervous now about large or new undertakings. A disturbing factor was apt to be greatly magnified, and the results would be detrimental to all concerned. Stability and confidence were requisites that should characterize production, sales and distribution, and any unpropitious influence affecting the situation would only tend to

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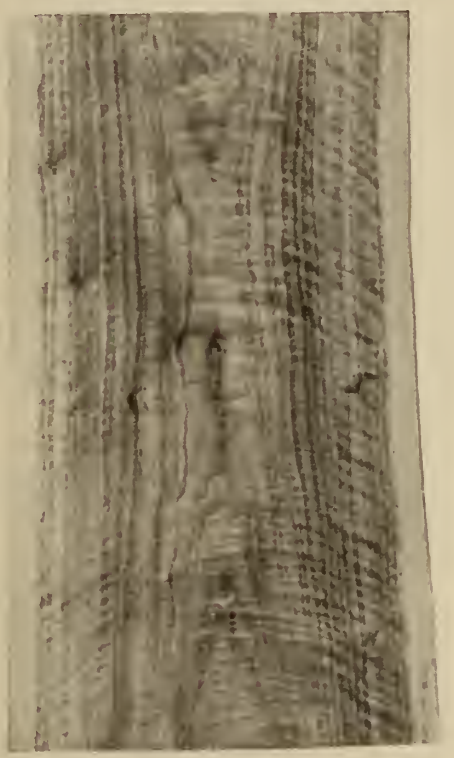

Your personal investigation of our ability to serve you can be accomplished with the greatest ease. Merely write to the WILLEY plant for samples of veneer to suit your requirements, and our varied resources will at once be placed at your disposal.

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And Many Other Foreign and Domestic Woods

(2215)

Nature's Heirlooms

QUAINT relics of bygone days, made and prized by former generations, bequeathed as the last testament of ancestors perhaps now long forgotten, are kept and treasured beyond price. A violin mellowed by centuries of music, a spinnet silent now since pianos were devised, or perhaps a hand-carved cradle dim with dust, possess immeasurable dignity and pathos.

The massive beamed ceilings of a manor, the warm-toned panels of a refectory, the rightly ornate choir-stalls of a minister, perpetuate the memory of a vanished age. Surely it behooves us to pause in our modern mad career to create and cherish some such graceful expression of our finer nature by which our age may be remembered after we too have passed away. Heirlooms of the future are being fashioned now from WILLEY'S beautiful veneers.

Yet an object wrought from beautiful wood is doubly an heirloom to him who claims heritage from Nature as well as from human ancestors. "To him who in the love of Nature holds communion with her visible forms," the craftsman's labor is pervaded by the antiquity of primeval forests, while the fortunate possessor's appreciation is dignified by the sanctity of cloistered groves.

C. L. WILLEY COMPANY

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Sales Representative
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232 Lyon St., N.W.
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W. B. VAN
Eastern
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Everett Hotel,
Jamestown, N.Y.

complicate matters and mar what otherwise is likely to be an excellent year in the lumber business.

Imported Woods

Most imported hardwood centres in the United States report a very active market, although railway troubles at some points is still hampering shipments. Prices are firm with an upward tendency if anything. All varieties of wood seem to be in demand and enquiries are forthcoming from all branches of the wood-using industry. Reports from specific hardwood centres follow:

Evansville, Ind.—The demand for the best grades of hardwood lumber is strong and has been increasing during the past month. Manufacturers and wholesale dealers report that both January and February showed a big gain in trade over the corresponding months of last year and they believe that March also will show an increase. The demand is strong for all kinds and the prices have tended upwards. The local manufacturers are of the opinion that while lumber prices on certain items will advance, there will be no runaway market, and this is something they want to avoid, they say. The automobile industry and the furniture industry are the biggest buyers of lumber in this market at the present time, although other users of hardwoods are fairly heavy buyers.

Memphis, Tenn.—There has been some delay in the movement of lumber and forest products to destination, because of the shortage of box cars which has developed in the southern hardwood producing territory. It is anticipated that this shortage will prove only temporary. Demand for hardwood lumber is both broad and active and the market occupies a very firm position, with a slightly upward trend. Automobile, furniture, box, crate, flooring, and sash and door manufacturers represent the most active consuming groups now in the market, but there is increasing inquiry from other users of hard wood lumber. Veneers are sharing the increase demand and they are likewise showing a decidedly better undertone, with some advance in quotations. Door and panel stock appears to be more wanted than at any time since the improvement in the market began to manifest itself and there is a larger inquiry for all veneers than heretofore.

Louisville, Ky.—Demand for hardwoods continues very active, a number of firms reporting that they are about sold out or are low in dry stocks, for immediate shipment. Transportation conditions are somewhat better than they have been, with less delay for cars, or at connecting points. Movement is general to the hardwood jobbers, planers or producers of interior trim, hardwood flooring, box plants, automobile and furniture trades, with better demand from the wagon trade and fair movement to implement manufacturers. The trade as a whole is feeling very well concerning business and outlook, and complaints are not at all numerous. Production is again picking up a little as a result of better weather and greater logging activity. Locally mills are operating on better log supply. However, production has not been keeping pace with demand, it is said, and supplies are getting a little short in some items.

It is a mistake to imagine that the faster you revolve your saw the quicker it will cut. Speed is only one of the conditions governing the sawing speed.

News of the Trade

The Lorne Tractors, Ltd., of Tillsonburg, Ont., announce that they are in the market for band saw, heavy boxing machine and small miller and wood lathe.

James E. Rhodes, Inc., 107 Front St. E., Toronto, well known American manufacturers and dealers, supplying the furniture trade with chamois, sponges, pumice stone, rottenstone, felts, steel wool, etc., have opened a Canadian branch at the above address.

Moore Bros., Wayland Ave., Toronto, sash and door manufacturers, are erecting a brick building on Gerrard St., near Main St., and have purchased an endless bed planer, a variety saw, power feed saw and band saw, to take care of their increasing business.

E. T. Carter & Sons, Front St., Toronto, manufacturers of and dealers in furniture supplies, have appointed R. F. Askew manager of their furniture materials department. A. B. Carr, who formerly was in charge of the department, died several weeks ago of heart trouble.

The Harriston Casket Co., of Harriston, Ont., have recently installed considerable new machinery. The work was under the direction of Walter Cartledge and it is expected that the output will be nearly doubled as a result. They report business prospects as being very satisfactory.

Messrs. White & Son, Wroxeter, Ont., are branching out in their manufacturing endeavours and in the future will produce, in addition to their well known "Huron" line of children's specialties, various other novelties and toys. Their factory is well equipped for this class of work and should business continue satisfactorily, it is their intention to extend and enlarge their factory.

J. E. Ruppell, well known to furniture circles around Waterloo and Kitchener, Ont., has been appointed general superintendent of Snyder's Ltd., Waterloo. Mr. Ruppell first learned the upholstering trade with the Snyder firm many years ago and for twelve years was in charge of that department until his recent appointment.

J. P. Abel-Fortin, Ltd., Montreal, recently secured the contract for all the interior trim and doors for the new Notre Dame Hospital, Montreal.

George McAllister & Sons, Ltd., Guelph, Ont., who manufacture slack cooperage and lumber, recently suffered a loss of about $16,000 when their sawmill at Bloomingdale was destroyed by fire. The mill is being rebuilt and will be running again in a short time.

Wilbert Hooey, founder of the Eureka Refrigerator Co., died at his home in Swansea, a suburb of Toronto, in his 66th year. Mr. Hooey had been living in retirement for the past six years, after spending thirty years in the manufacture of refrigerators. About six years ago, the Eureka Refrigerator Co. was sold to Keenan Bros., of Owen Sound, Ont.

H. Koekpke, of Kitchener, Ont., a well-known building contractor, will start a planing mill and retail lumber yard about the first week in April. The planing mill, which is fast nearing completion, will be fully equipped with modern machinery for the manufacture of sash and doors, etc. It will be a two-storey building with the machinery distributed on both floors. This business will be known as the Twin City Sash and Door Co., Limited, of Kitchener. The firm will also continue to do general contracting.

The London Iceless Refrigerator Co., London, Ont., is a new firm recently formed with a $1,000,000 capital. The new company will start work shortly on a new factory. They

The Sidman Lumber Curing Process

IN

Either Wood, Brick or Concrete Building.

Fillers and glazes to preserve the building.

The TAG-ROESCH **Automatic** Time-Temperature and **Humidity Controller.**

Three-ply and Du-o-fold Army Duck Curtains, and Hussey Door Carrier Doors.

Automatic Heating, Ventilating and Humidity Systems for Varnish Rooms.

Reducing and Back Pressure Valves, Oil and Grease Extractors.

Sidmans AUTOMATIC **Suction System** for returning ALL Condensation DIRECT to the Boiler.

Cantilever Steam Traps and other Steam Specialties.

Active and Non-Down Draught Vent Heads for all purposes.

Cleanable Screen Panel and Window Ventilators.

Roller Bearing (Ott) **Channel Iron** Car Bunks and Transfer Cars.

Thermostats, Recording Gauges, and The Sidman Special Hygrometers.

For Description and prices, write

The

Sidmans of Canada

Heating and Ventilating Engineers and Lumber Curing Specialists

LONDON **ONTARIO**

"Well Bought is Half Sold"

LOOK DOWN
and
TAKE UP
With Us

100	M′	4/4″ No. 2 & 3 Com. Ash.
150	M′	4/4″ No. 3 Com. Maple, Birch and Beech.
30	M′	4/4″ No. 2 Com. & Btr. Elm.
12	M′	8/4″ No. 2 Com. & Btr. Elm.
2	cars	4/4″ Elm Crating.
2	“	5/4″ No. 2 & 3 Com. Basswood.
3	“	4/4″ No. 1 Com. & Btr. Birch.
1	“	12/4″ No. 2 Com. & Btr. Maple.

Canadian General Lumber
Company Limited

FOREST PRODUCTS

TORONTO OFFICE:—712-20 Bank of Hamilton Building

Montreal Office:—514 Canada Cement Company Building

Mills: Byng Inlet, Ont.

will open business in part of Clark Machinery Company's factory, about April 1.

S. Herbert, who for several years conducted a sash and door factory at Thetford Mines, Que., died recently.

The executive committee of the National Association of Upholstered Furniture Manufacturers met in Chicago early in the year and decided to hold their annual convention at Atlantic City on April 10, 11 and 12.

A report states that Albert Hudson intends to take over and operate the Milverton Furniture Co., beginning April 1. The firm is now established in a new four-storey building, which is modern and completely equipped.

The North American Furniture Co. and the Owen Sound Chair Co. Ltd., of Owen Sound, Ont., have recently offered the trade a handsomely illustrated catalog. Many beautiful color reproductions make the pages particularly attractive, one being a Jacobean dining room suite, another a breakfast room suite, another a bedroom and a living room.

Pierce Phonograph Motors, Ltd., Montreal, is a new firm recently incorporated to take over the business of Pierce Phonograph Motors, Rgd., and to manufacture phonograph motors, cabinets, furniture and other musical instruments. Capital $99,000.

Western Body Works, Ltd., Winnipeg, Man., was recently incorporated in that city.

The Bennett Box Co., Winnipeg, Man., is a newly incorporated firm, manufacturing all kinds of novelties.

Southampton Plywoods, Ltd., successors of Panels, Ltd., Southampton, Ont., makers of table tops, panels and other plywood products, are now doing a good business and look forward to a good year. J. Hood is the general manager of the organization.

A charter has been granted to the Adanac Lumber & Mfg. Co., Limited, 341 Victoria St., Toronto. The new organization is composed of several local citizens.

Weismiller Bros., Bala, Ont., have installed a new Yates type A-1 15-in. planer and matcher, equipped with single profiler and six knife round cylinders, which has greatly increased their output.

The Mattawa Lumber Co., Ltd., Montreal, is a new firm recently incorporated with a capital of $50,000, to deal in all kinds of wood products.

Walnut Furniture Manufacturing Co., Limited, Montreal, is a new organization with a federal charter to manufacture and deal in furniture of all kinds. Capital $50,000.

E. H. Stroud & Co., of Chicago, are finding a ready sale for their Stroud air separation wood pulverizers. Shavings, sawdust, planer chips and other waste wood are ground by the machine into a fine wood flour. This product is being used for the manufacture of mouldings, bases for phonograph records and many other products.

The plant of the Canadian Wagon & Novelty Co., Preston, Ont., was destroyed by fire recently.

Barrett Bros., general woodworkers, Ottawa, have completed their new sash and door factory and have installed a shavings exhaust supplied by Toronto Blower Co.

The Hespeler Woodworking Co., Hespeler, Ont., will start work shortly on a two storey, 60 x 130 ft. addition to their factory. The new building will be of brick and concrete construction.

D. A. Downey & Co., Drayton, Ont., well known builders and contractors, have recently purchased a large planing mill from S. P. Treleaven and will manufacture trim and other products.

The planing mill of Stuart Bros., Hyde Park and Aberdeen Ave., Hamilton, Ont., was destroyed by fire recently, causing an estimated damage to building and contents of $15,000. The owners expect to rebuild.

Nadeau & Frere, Beauceville, Que., makers of wagons and carriages, recently suffered a fire loss of $10,000, when their plant and contents were burned.

Wm. Ewing, of Ewing & Murphy, wood turners, Toronto, died recently.

The Ever-Clean Towel Cabinet Co., Ltd., Montreal, has recently been granted a federal charter to manufacture towel cabinets. Capital $50,000.

Fire destroyed the sash and door factory of Mr. Bertrand at Masham Mills, Que., recently, causing an estimated loss of about $50,000. Several thousand doors and window frames, together with lumber in pile, were consumed by the flames.

Gilmour Chair Co. Ltd., Coaticook, Que., is a new firm with a provincial charter, to take over the business conducted by the late George Gilmour, of Coaticook. The firm will manufacture and market all kinds of furniture.

The Consolidated Box Co., Ltd., Montreal, recently obtained a charter.

Fire recently visited the band saw and planing mill of J. A. Gregory, West St. John, N.B., doing considerable damage to building and machinery.

D. Aitchison Lumber Co. Ltd., Hamilton, Ont., was recently granted a provincial charter to manufacture and market sash, doors, cabinets and other wood products. Capital $200,000. C. E. Paterson and D. Cole, both of Hamilton, are two of the incorporators.

The Rastall Lumber Co., Ltd., have opened a new planing mill and lumber yard at 2789 Danforth Ave., Toronto. The plant is equipped with a Cutler dry kiln, Cowan & Co., woodworking machinery, Goldie-McCulloch engine and a blower system.

Furniture That is Painted

(Continued from page 76)

black. In its right environment and surroundings it would look fine. In Nottingham I saw three bedroom suites being done by a firm in green-grey and one in a light blue, and all of them were picked out in white.

I would like to point out to you that the trade is still feeling its way towards producing good and bright furniture, which can be of the cheaper type as well as of the more expensive. It is time brighter furniture was made. The dull walnuts and ghastly yellow of satin walnut, and heaviness of oak, are too much with us. As you know, color is very beautiful if carefully used, but cheap furniture badly painted and colored, would be too awful to contemplate. I think the furniture trade is, however, taking up the matter in the right way, and realizing the great possibilities in color.

The Peter Hay Knife Co., Ltd.

Manufacture the Best

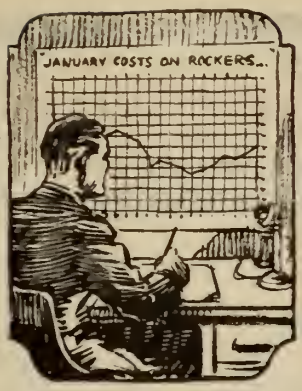
PLANER KNIVES and CUTTERS

OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited

GALT, ONTARIO

Gum



Oak, Ash and other Southern Hardwoods

How woodworkers reduce costs

Lumber—
Kraetzer-Cured
means—

1. Freedom from warp.
2. Maximum quality.
3. Lower moisture contents.
4. Less kiln drying Cost.
5. Uniformity.
6. Accurate grading.
7. Bright, unstained lumber.
8. Saving in working costs.
9. Dependability.

Isn't this the kind of lumber you're looking for?

Where standardization exists in the wood working plant you'll generally find economy.

Each department depends on the other. The cutting up department sets the pace.

By having lumber **exactly** according to correct specifications every department keeps busy **all the time.** Costs are lowered.

That's a big feature with Kraetzer-cured Lumber—it's **always exactly** according to specifications. Hundreds of satisfied users are glad to testify to this.

Member of

HARDWOOD MANUFACTURERS INSTITUTE · SCIENTIFIC UTILIZATION · TRADE MARK

The
Kraetzer-Cured Lumber Co.
Greenwood, Miss.

ON EVERY BOARD THE KRAETZER-CURED LUMBER CO. YOUR GUARANTEE OUR MUTUAL PROTECTION

Look for the Brand on Every Board

General Woodworking Trade Mart

Quick Action Section

Equipment Materials Employment

For Sale

Large, second-hand Power Feed Rip Saw, shaving fan, single end tenoner, and swing saw. Apply D. McKenzie Mach. Co., Guelph, Ont. 3-T.f.

For Sale

Surfacers, Planer and Moulders

S. A. Woods No. 28—Hardwood Flooring Planer and Matcher	$ 600.00
Fay and Egan 15" x 6" Planer and Matcher	900.00
Levi Houston 9" Outside Moulder	200.00
S. A. Woods No. 59 24" x 6" double Surfacer fine shape, Sectional rolls. Just the machine for Box Factory	1,500.00
S. A. Woods No. 107— 12" x 6" Moulder Very popular Machine	1,650.00
S. A. Woods No. 22—15" x 6" fast feed Planer and Matcher—6 knife round heads and double profiler feeds up to 225 per minute. Thoroughly rebuilt. Guaranteed. Description and price on request.	

Box 149, Canadian Woodworker, Toronto. 3

For Sale

10" 4 Sided Moulder, McGregor Gourlay.
10" 4 Sided Moulder, Ballantine.
10" 4 Sided Sticker.
8" 4 Sided Sticker, Cowan.
36" Cabinet Planer, Ballantine.
36" Surface Planer, American.
36" Surface Planer, Cowan.
30" Surface Planer, McGregor Gourlay.
26" Pony Planer, Clark & Demill.
25" Double Surface Planer, Hermance.
24" Surface Planer, Revolving Bed, Clark & Demill.
24" Surface Planer, Clark & Demill.
24" Surface Planer, Revolving Bed, Cowan.
24" Pony Planer, McGregor Gourlay.
24" Planer & Matcher, Ballantine.
24" Planer & Matcher, Bertram.
2 Spindle Shaper, Goldie McCulloch.
2 Spindle Shaper, Whitney.
Power Feed Rip Saw, Goldie McCulloch.
2—Iron Rip Saws, Goldie McCulloch.
Railway Cut Off Saw, American.
Swing Saw, Ballantine.
Jig Saw.
Arm Sander, Cowan.
2 Spindle Boring Machine, Ballantine.
Combination Woodworker.
2—18" Swing Engine Lathes, Stevens.
Gap Lathe, McGregor Gourlay.

All Machines thoroughly overhauled.

Preston Woodworking Machy. Co. Ltd., 3 Preston, Ont.

For Sale

2 Mitts & Menill Factory Hogs.
1 Bandsaw Resaw Grinder.
Shingle Mill Machinery.
Wooden Pail & Tub Machinery.

THE C. BECK MFG. CO. LIMITED, 12-3 Penetanguishene, Ont.

For Sale

Priced at Worth-while Saving Prices

No. 803	C. M. C. High Speed Ball Bearing Shaper—like new.
No. 218	C. M. C. 30" Heavy Cabinet Planer, with Round Safety Cylinder and High Speed Knives and Sectional Rolls and Chip Breaker—splendid condition.
No. 65	Oliver Self-Feed Rip Saw.
No. 201	Greenlee Horizontal Hollow Chisel Mortiser—equal new.
No. 916	C. M. C. Vertical Wood Borer—same as new.
No. 832	C. M. C. 20" Wood Lathe, Double End,—same as new.
No. 823	C. M. C. 20" Buzz Planer—equal new.
No. 824	C. M. C. 24" Buzz Planer—equal new.
No. 660	Greenlee 8"—four sided Heavy Pattern Moulder.

We will be only too pleased to send you descriptive circulars as well as attractive prices on request.

WILLIAMS & WILSON LIMITED, No. 84 Inspector Street, 3 Montreal.

GOOD VALUES

Subject to Prior Sale

Band Resaw, Connell & Dengler, 54 and 60 inch.
Band Rip Saw, Yates No. 281.
Circular Saw Mill, Hoosier Pony.
Circular Resaw, 30" and 44".
Dowel Machine, Clement.
Dowel Gluer and Driver, E. B. Hayes.
Jointer, Falls Machine Co. under cut 24".
Jointers, 12", 16", 24".
Jointer, Diehl, Continuous Feed.
Lathe, Back Knife, Clement 40".
Matcher, American No. 229 hardwood.
Matcher, Berlin No. 94, 15" x 6".
Moulder, Woods 10 and 12" inside.
Moulder, American 7" and 10" 4 side.
Planers, all sizes, single and double.
Sander, endless bed, 48" H. B. Smith.
Sander, Moore Machine Co. belt.
Sanders, Berlin 36", 42", 48" and 60".
Sander, Clement Belt roller table.
Saws, Berlin Double Cross Cut.

Woodworking Machinery Co., of Buffalo, 54 Mechanic St., Buffalo, N. Y. 10 T.f.

Southern Sash and Door Meet

The Southern Sash, Door and Millwork Manufacturers' Association, which has headquarters at Atlanta, Ga., held its first meeting on the west side of the Mississippi river at the Eastman Hotel, Hot Springs, Ark., on February 14 and 15. The general interest accorded to the meeting is shown by the fact that members were present from thirteen states. The sessions were presided over by P. F. Conway, of Danville, Va., president of the association.

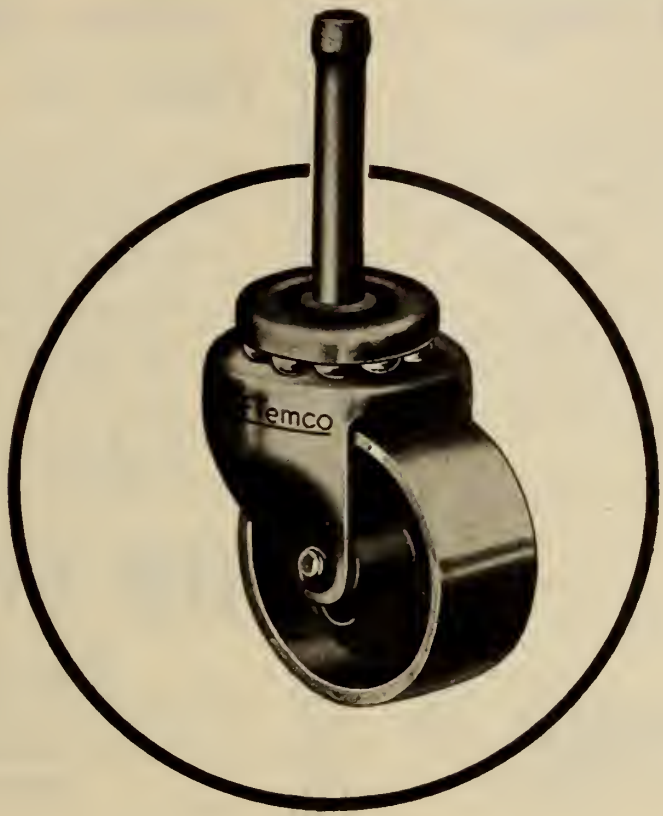
A Talk on Standardization

Emory Eade, of C. T. Abeles & Co., Little Rock, Ark., delivered a fine address on "Standardization of Millworks." He spoke of the necessity for a closer estimating of costs and said that his company had recently finished a stair rail for which it received $111, which had cost about $150, because the details were not complete and it did not look at first like a very expensive piece of work. In standardization he had in mind the possibility of a mill in one part of the country making a certain product the same as a mill man in another part of the country, so that the two would match. In considering the production end of the business in connection with standardization there were three fundamental questions arising: (1) Is it possible? (2) Is it practical? (3) Is it profitable? As to the profit feature it was imperative to know costs, not only for one man to know them, but also his competitor. The operator must know his plant, because what is profitable for one plant to turn out may be loss for another, so that the plant should be given such orders as are suitable for it. It was price that brought fir doors into eastern markets and that price was justified by their low cost of production, and this was accomplished by standardization aided by efficiency. As to the practability of standardization it would be necessary to educate the architect, as well as the public. The low cost would quickly convert them to standardization.

The Walnut Situation

Members in attendance at the meeting of the American Walnut Manufacturers' Association, held in the offices of the organization in Chicago on February 15, expressed themselves as fairly well satisfied with present business conditions. Domestic demand is good and export business, in addition to being fair is very encouraging. One peculiarity of the demand for walnut is its regularity. Its largest purchasers consist of well established firms turning out a high grade product and whose business is so handled that the demand for walnut does not receive the flightly or spasmodic ups and downs so peculiar at times to other woods.

The next meeting of the American Walnut Manufacturers' Association will be held in Chicago on March 15.



Efemco Casters Stand the Test

For instance, the Acme Grip Neck Ball Bearing Caster shown above is typical of sturdy, smooth acting **Efemco** Casters.

A rugged top keeps the bearings always in place and prevents binding.

Plain, brass-plated or nickel-plated finish. Sizes 3, 4, 5, 6, 7 and 8. With maple, lignum vitae, steel, iron or fibre wheels.

There is an **Efemco** Caster for every use.

Send for our latest catalog

FOSTER, MERRIAM & CO.

Meriden, Conn. Hamilton, Ontario New York City

Efemco PRODUCTS

Grip Neck Casters
Ball Bearing Casters
Roller Bearing Casters

Washing Machine Casters
Truck Casters

Piston Rings
Grey Iron Castings
Automobile Accessories

Standardized by 87 years of service

Announcing—

We wish to announce that we are now the Agents for this district for the **Elliott Machinery Company, Limited,** manufacturers of the famous Elliott Woodworker, Jig Saws, Shapers, Floor Sanders, Pony Planers, Band Saws, etc. We would be glad to furnish information and prices on request, and invite inspection of machinery at our warehouse.

Immediate shipments made from our stock.

A full line of used woodworking and metal working machinery is also carried.

GENERAL MACHINERY CO.
67-69 Frederick St., TORONTO
TELEPHONE MAIN 2200W

Are You also tired of "claims"—

Get facts—ask users direct—make your own comparisons—if you want to meet competition with better drying ask the man who uses kilns. We will gladly send our list of users and book on kilns—get it for your start. Address:

THE STANDARD
Dry Kiln Co.
1542 McCarty St.
Indianapolis, Ind.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

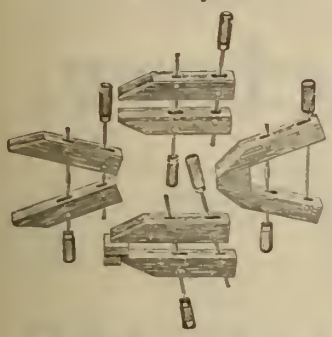
Mills Coal Grove, Ohio

CANADIAN ENQUIRIES SOLICITED

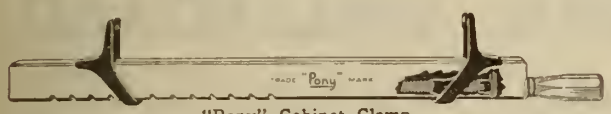
General Offices: 33 Rector St. New York City

The "JORGENSEN"
Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws



The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."



"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

Manufactured only by the

Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

For Sale By

Aikenhead Hardware Limited .....Toronto
Lewis Bros., Limited .....Montreal

FIBRE CORD
(yards cheaper)

Any sizes, natural or brown.

Wire centre stakes cut to special lengths.

Hard round fibre for furniture of the better class.

Woven hard fibre.

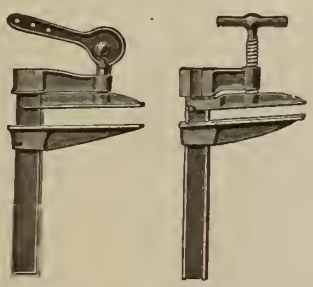
Flat and split fibre reeds.

Close woven and open webbings.

NATIONAL PATENT REED SALES CO.
Drexel Building — Philadelphia, Pa.

Sole Selling Agents:
NATIONAL PATENT REED COMPANY
Unionville - Conn.

Colt's Clamps
for the
Woodworker



Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

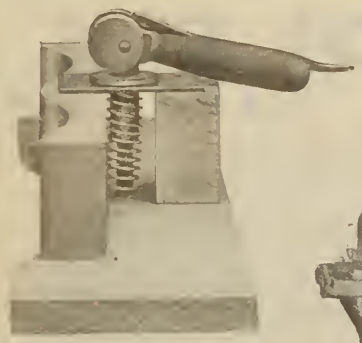
Colt's Clamps are quick-acting and have broad jaw clamping surface.

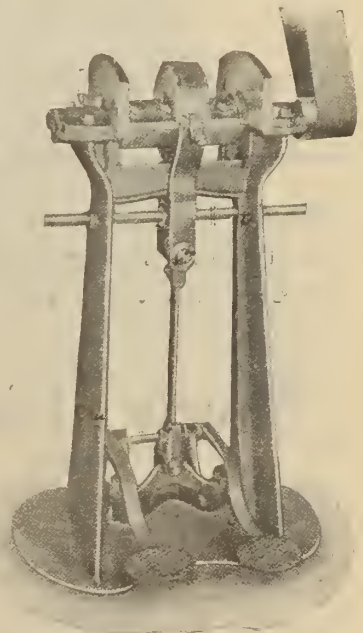
For further information write for Catalogue No. 294.

Batavia Clamp Co.
235 Centre St. BATAVIA, N. Y.

Pettingell Stock Clamp

Pettingell Stock Clamps for holding stock on forms or jigs when milling or cutting irregular shapes of stock on Dressers — Shapers or Moulding Machines.





Irregular Dresser or Shaper

This machine is designed for dressing all odd or irregular stock to shape. Especially suitable for box pattern work. Necessary in every mill where body stock is turned out.

Woodworking Machines

No. 19 Small Saw Tenoner.
No. 21 Regular Bevel and Mitre Saw.
No. 23 8½-in. Irregular Dresser.
Woodworkng machines equipped.
No. 20 Large Saw Tenoner.
No. 22 Large Bevel and Mitre Saw.
No. 24 6-in. Irregular Dresser Stock clamps.
wth direct motor or belt drive.

Write for catalogue

PETTINGELL MACHINE COMPANY
AMESBURY - MASS.

THIS Might Have Been *YOUR* Factory!

a very large proportion of the total

FIRE AT MONTREAL

Montreal, March 3—Fire originating in a paint shop on the third floor practically destroyed the plant of the Trudeau Carriage Company on Visitation street here last night with a loss estimated at considerably over $100,000. The estimate does not include loss on 25 motor cars in the plant for repairs or on one hundred more or less complete car bodies. There was $25,000 insurance on the building.

Burnt out in a night! Just one of a thousand fires that are taking their toll in the woodworking industry. The next may be in Stratford or Vancouver—it may be **your** plant. The inflammable nature of the stock makes your risk very great. Proper protection means a great deal to you.

GYPROC WALLBOARD

offers that protection. At small expense old or new buildings can be made permanently fireproof. GYPROC can be sawn like wood and nailed to the walls like ordinary board. If fire breaks out it is confined to that room by walls of solid rock. GYPROC is approved by Fire Underwriters and Fire Chiefs as the most thoroughly practical method of fire prevention. It merits your consideration.

Write for our booklet containing the story of GYPROC and what it can do for you.

THE ONTARIO GYPSUM COMPANY LTD.

HEAD OFFICE: PARIS, ONT.

Branches: 374 Beaver Hall Sq., Montreal, 106 Don Esplanade, Toronto

Mills: Caledonia, Ont., and Lythmore, Ont.

MAPLE LEAF SAWS

There is a Maple Leaf Saw for every type of work – one that will reduce your cutting costs.

Maple Leaf Saws are made of extra refined Razor Steel tempered by our secret process.

Shurly - Dietrich

Limited

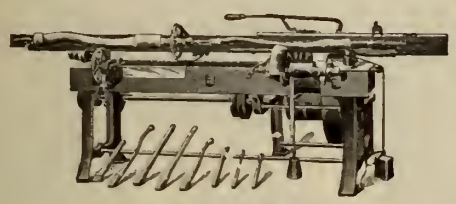
Galt - Canada

Store and repair branches at Vancouver

"The largest all-Canadian saw manufacturers."

Klotz Machine Co's
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

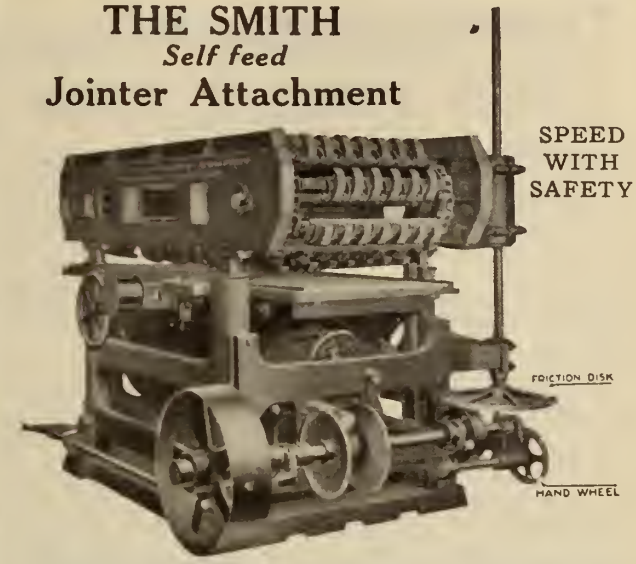
We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

MANUFACTURED BY

Klotz Machine Co.,
Sandusky, O., U. S. A.

Write for descriptive circulars and prices.

THE SMITH
Self feed
Jointer Attachment



Here is a self feed jointer attachment that is saving its users an average of $1200.00 per year.

We will make this attachment to fit any standard jointer or will furnish jointer and attachment complete.

SMITH MACHINERY CO.
SAGINAW - MICH.

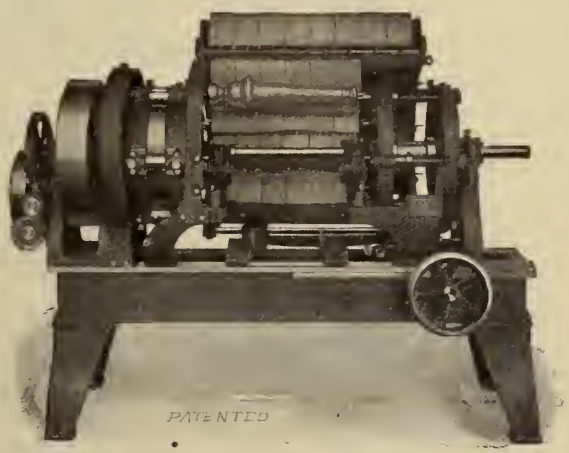
We Manufacture a complete line of

Chair, Cane-Cutting
and
Bending Machines

CUTS AND CATALOG
UPON REQUEST

L. G. McKnight & Son Co.
GARDNER, MASS.

DON'T LET



the lack of a Nash Sander for your furniture turnings keep you from taking all the orders you can get.

Get the Sander and fill the orders.

J.M.NASH, Milwaukee, Wis.

The "Canadian Woodworker" Buyers' Directory

The following regulations apply to all advertisers:—Full page, every issue, thirty-two headings; half page, sixteen headings; quarter page, eight headings; eighth page, four headings.

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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Co., Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B. Hamilton Ont.

BAND SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, Que.
Yates Machine Co., P. B. Hamilton, Ont.

BAND SAW MACHINERY
Yates Machine Co., P. B. Hamilton, Ont.

BAND SAW STRETCHERS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

BASKET MACHINERY
St. Joseph Iron Works, St. Joseph, Mich.

BEAVER BOARD
Rathbone, Geo. Ltd., Toronto, Ont.

BENCH PLANER
Oliver Machinery Co., Grand Rapids, Mich.

BENDING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
McKnight & Sons Co., L. G., Gardner, Mass.

BEVEL & MITRE SAWS
Pettingell Machine Co. Amesbury, Mass.

BIRCH
Anderson, Shreiner & Mawson, Ltd., Toronto
Edward Clark & Sons, Toronto, Ont.
Maus Lumber Co., Chas. O. South Bend, Ind.

BOILER FEED PUMPS
Smart-Turner Machine Co., Hamilton, Ont.

BLOWERS
Canadian Blower & Forge Co. Kitchener, Ont.
Sturtevant B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

BLOW PIPING
Canadian Blower & Forge Co. Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

BORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
McKnight & Sons Co., L. G., Gardner, Mass.
Nash, J. M. Milwaukee, Wis.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company Preston, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

BOX BANDS
Laidlaw Bale-Tie Co., Hamilton, Ont.

BOX MAKERS' MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

CABINET PLANERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CARVINGS
Klise Mfg. Co., Grand Rapids, Mich.
Decorators Supply Co., Chicago.
Walter, John & Sons Limited, Kitchener, Ont.

CARVING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

CARVING MACHINE BITS
Independent Tool Works, St Paul, Minn.

CARVED WOOD MOULDINGS
Klise Mfg. Co., Grand Rapids, Mich.

CASTERS
National Hardware Co., Orillia, Ont.

CENTRIFUGAL PUMPS
Smart-Turner Machine Co., Hamilton, Ont.

CHAIR MACHINERY
McKnight & Sons Co., L. G., Gardner, Mass.

CIRCULAR SAWS
Atkins & Co., E. C. Indianapolis, Ind.
Shurly-Dietrich, Galt, Ont.

CLAMPS
Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Black Bros. Co., Mendola, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Sons Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company,
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

CLAMP CARRIERS
Black Bros. Co., Mendota, Ill.
Taylor Mfg. Co., Poughkeepsie, N.Y.

COATED ABRASIVES
Herman Behr & Co., Inc., Brooklyn, N.Y.

COTTON WASTE
Carter, E. T., Toronto, Ont.

COTTONWOOD PANELS
Rathbone, Geo. Ltd., Toronto, Ont.

CRATE MACHINERY
St. Joseph Iron Works, St. Joseph, Mich.

CROSS-CUT, MITRE AND RIP SAWING MACHINE
Mackenzie Machinery Co., D. Guelph, Ont.

CUT OFF SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Co., of Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Shimer Cutter Head Co., Galt, Ont..
Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.
Oliver Machinery Co., Grand Rapids, Mich.

DOORS
Pannill Door Co. Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

DOORS (Flush Veneered)
Pannill Door Co. Ltd., Toronto, Ont.
Hay & Co. Ltd., Woodstock, Ont.

DOORS (Fir)
Rathbone, Geo. Ltd., Toronto, Ont.

DOOR CARRIERS FOR DRY KILNS
Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Wylie & Co., Matthew Glasgow, Scotland

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company,
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Co., Preston, Ont.

DOWELS
Canada Wood Specialty Co. Ltd., Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont.
Cutler Desk Co., Buffalo, N. Y.
Grand Rapids Veneer Works, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sidmans, London, Ont.
Standard Dry Kiln Co., Indianapolis, Ind.
Sturtevant, B. F. & Co., Galt, Ont.

DUST COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.

EDGERS (Single Saw)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

EDGER SAWS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

ELECTRIC MOTORS
Sturtevant, B. F. & Co., Galt, Ont.

ENAMELS
Cosmos Chemical Co., Port Hope, Ont.

END MATCHING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

EXHAUST HEADS
Sturtevant, B. F. & Co., Galt, Ont.

EXHAUST SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

FEED ROLLS
Atkins & Co., E. C. Hamilton, Ont.

FIBRE PRODUCTS
Carter, E. T. Toronto, Ont.
National Patent Reed Sales Co., Philadelphia, Pa.
Walter, John & Sons Limited, Kitchener, Ont

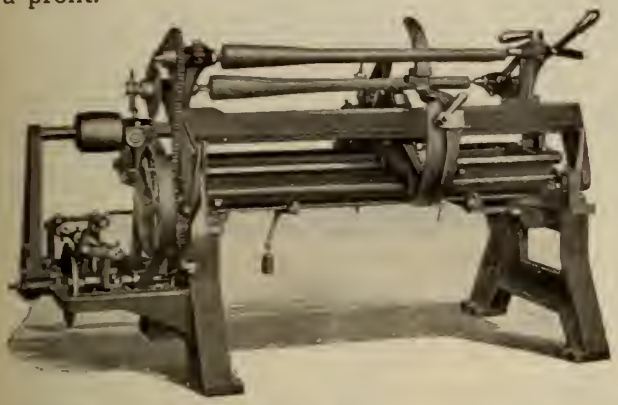
FIR DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

FLOORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FRUIT PACKAGE MACHINERY.
St. Joseph Iron Works, St. Joseph, Mich.

MAKE MORE MONEY

from your timber by working it into handles and other turned work. Short and crooked logs, small trees, and other waste material can be worked at a profit.



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Mr. Norman Jessiman, 505 Hastings St. W., Vancouver, B.C.
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Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.
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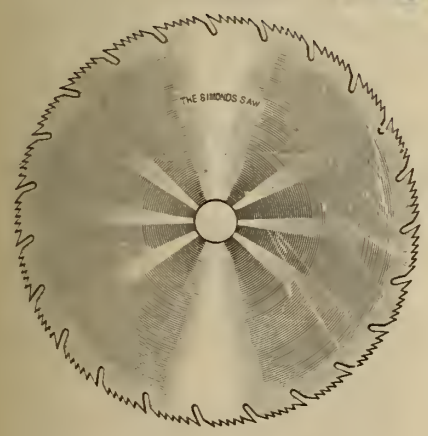

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High-grade Steel and perfect mechanical construction make Simonds Novelty Saws leaders everywhere. They cut smooth and hold their tension and cutting-edge longer.

We also make Concave, Groover and Special Circular Saws as well as Big Circular and Band Saws, Planer Knives and Files.

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"The Saw Makers"

Montreal, Que. - St. John, N.B. - Vancouver, B.C.

"Canadian Woodworker" Buyers' Directory—Continued

FIRE INSURANCE

Canadian Appraisal Co. Ltd., Montreal, Que.
Dominion Appraisal Co., Toronto, Ont.

GARNET PAPER AND CLOTH

Carborundum Co., Niagara Falls, N. Y.
Herman Behr & Co., Inc., Brooklyn, N.Y.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).

GRAINING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N. Y.

GLUE

Canada Glue Co., Brantford, Ont.
Cannon Canadian Co., Toronto, Ont.
Coignet Chemical Products Co., New York, N.Y.
Kane Manufacturing Co., Chicago, Ill.
Monite Waterproof Glue Co., Minneapolis, Minn.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS

Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

GLUE HEATERS

Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.

GLUE JOINTERS

Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS

Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDERS (Cutter)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Simonds Canada Saw Co., Montreal, P.Q.

GRINDERS (Knife)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N. Y.

GROOVERS

Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

GROOVING HEADS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Mattison Machine Works, Rochford, Ill.

GUM LUMBER

Chapman & Dewey Lumber Co., Marked Tree, Ark.
Hyde Lumber Company, South Bend, Ind.
Mercereau-Hawkins Tie Co., Huntington, W. Va.
Sondheimer Co., E., Sondheimer, La.

HAND SCREWS

Fay & Egan Co., J. A. Cincinnati. Ohio.

HANDLE & SPOKE MACHINERY

Fay & Egan Co., J. A. Cincinnati. Ohio.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Nash, J. M., Milwaukee, Wis.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.
National Hardware Co., Orillia, Ont.
Larsen & Shaw Ltd., Walkerton, Ont.

HARDWOOD LUMBER

Anderson, Shreiner & Mawson, Toronto, Ont.
Atlantic Lumber Company, Toronto, Ont.
Banning, Leland G., Cincinnati, Ohio.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Clark, Edward & Sons, Toronto, Ont.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Canadian General Lumber Co., Toronto, Ont.
Dudley Lumber Co. Inc., Memphis, Tenn.
Gulf Lumber & Trading Co., New Orleans, La.
Hall Bros. Ltd., Toronto, Ont.
Hyde Lumber Co., South Bend, Ind.
Johnston Lumber Co., Toronto, Ont.
Kneeland-Bigelow Co., Bay City, Mich.
Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Louisville Point Lumber Co., Louisville, Ky.
Luehrman Hardwood Lbr. Co., St. Louis, Mo.
Maus, Lumher Co., Chas. O. South Bend, Ind.
Mercereau-Hawkins Tie Co., Huntington, W. Va
Mississippi Hardwood Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Otis Mfg. Co., New Orleans, La.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Walnut Co., St. Louis, Mo.
Ritter Lumber Co., W. M. Columbus, Ohio.
Sondheimer Co., E., Sondheimer, La.
Stack Lumber Co., Escanaba, Mich.
Stark & Co., Jas. E., Memphis, Tenn.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Stimson & Co., J. V., Owensboro, Ky.
Sullivan, Frank T. Buffalo, N. Y.
Wood Mosaic Co., Louisville, Ky.
Willey Co., C. L. Chicago, Ill.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HARDWOOD LUMBER (Kiln Dried)

Rathbone, Geo. Ltd., Toronto, Ont.

HEATING SYSTEMS

Toronto Blower Co., Toronto, Ont.

JOINTERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shimer Cutter Head Co., of Can. Ltd., Galt.
Simonds Canada Saw Co., Montreal, P.Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNOBS

Waddell Mfg Co., Grand Rapids, Mich.

LACQUERS

Cosmos Chemical Co., Port Hope, Ont.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Klotz Machine Co., Sanducky, Ohio.
Mattison Machine Works, Rochford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.

LEGS

Klise Manufacturing Co., Grand Rapids, Mich.

LUMBER DRY KILNS

Sturtevant, B. F. & Co., Galt, Ont.

MACHINE KNIVES

Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Peter Hay Knife Company, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

MITRE SAWS

Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
McKenzie Machinery Co. D. Guelph, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS

Sturtevant, B. F. & Co., Galt, Ont.

MOTORS

Sturtevant, B. F. & Co., Galt, Ont.

MOULDINGS

Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A. Cincinnati. Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS

Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES

Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

OAK FLOORING

Rathbone, Geo. Ltd., Toronto, Ont.

OIL STONE GRINDERS

Oliver Machinery Co., Grand Rapids, Mich.

PAINT

Marietta Paint & Color Co., Marietta, Ohio.

PANELS

Calhoun Plywood Co., Sheboyan, Wis.
Hardwood Products Co., Neenah, Wis.
Hay & Co., Woodstock, Ont.
Pannill Door Co. Ltd., Toronto, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PATTERNS PINE

Rathbone, Geo. Ltd., Toronto, Ont.

BIRD'S-EYE VIEW OF ROCKFORD, ILL.

CARBORUNDUM BRAND GARNET PAPER AND CLOTH IN THE WOODWORKING CENTERS OF AMERICA

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BACK in 1834, two courageous pioneers, Thatcher Blake and Germanicus Kent, built a small dam and a saw mill close to what is now the center of Rockford, Illinois.

This really was the founding of what is now one of the leading furniture centers of America, for today Rockford is a thriving city of 80,000 people—a community that combines with its civic pride the true spirit of industrial energy.

There are over thirty-five model furniture plants in Rockford, employing 4000 men and producing an output valued annually at about $12,000,000.

In the majority of these plants you will find Carborundum Brand Garnet sanding tops and panels, bedroom and dining-room suites, chairs, tables, desks, chests and cabinets—Rockford products that find a market the world over.

Rockford's skilled sanders use Carborundum Brand Garnet because they know what it means to have garnet paper and cloth that really cut clean and fast and uniform, that give a finish in keeping with Rockford ideas of quality.

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"Canadian Woodworker" Buyers' Directory—Continued

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corporation, New London, Wis.
Calhoun Plywood Co., Sheboygan, Wis.
Guelph Patent Cask Co., Scotstown, P. Q.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

RATTANS
Carter, E. T., Toronto, Ont.

REEDS
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

REVERSIBLE PLANING MILL FANS
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FOLLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
McKenzie Machinery Co., D., Guelph, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

SANDPAPER
Behr & Co., Herman, Brooklyn, N. Y.

SASH DIMENSION
Pannill Door Co., Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW SHARPENERS
Oliver Machinery Co., Grand Rapids, Mich.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKenzie Machinery Co., D., Guelph, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

SOFTWOODS
Canadian General Lumber Co., Toronto, Ont.
Rathbone, Geo., Limited, Toronto, Ont.
Hall Bros. Ltd., Toronto, Ont.
Reese Shcriff Lumber Co., Williamsport, Pa.
Luehrman Hardwood Lumber Co. Chas. F., St. Louis, Mo.

SPRUCE DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM & OIL SEPARATORS AND REFINERS
Smart-Turner Machine Co., Hamilton, Ont.

STEEL PLATE PLANING MILL EXHAUST
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

STEEL PRESSURE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Calhoun Plywood Co., Sheboygan, Wis.
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

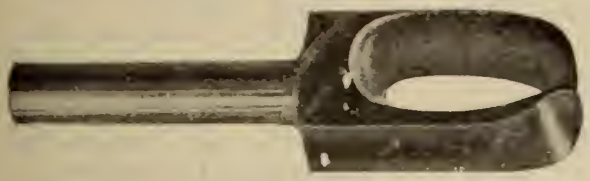
TRUCKS
National Dry Kiln Co., Indianapolis, Ind.
Oliver Machinery Co., Grand Rapids, Mich.

TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

Carving Machine Bits

POD BITS—All sizes from 5/64 to ½-inch
SQUARE END BITS—All sizes from 5/64 to ½-inch.



DOUBLE CUTTER BITS—All sizes from ⅜-inch, up.

ROUTER BITS—All sizes from ⅛-inch, up.

Made of the best material obtainable by men who have had years of experience in making this class of tools.

All styles of bits for multiple carving machines and routing machines.

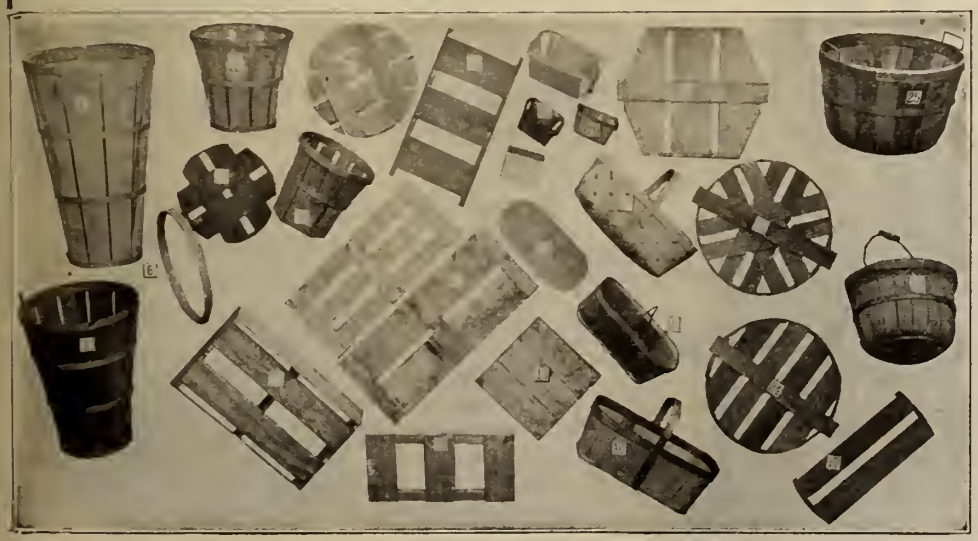
Shanks made to fit the machine you have; suitable for Victory, Lochman, Moore or Seaman Carvers.

Send for Catalogue "BC"

Independent Tool Works

Como and Marion **St. Paul, Minn**

THIS IS THE NAME



of the Machinery for the Rapid Production of

Veneer—Crates—Baskets—Fruit Packages.

"St Joe"

Get the name fixed in your mind.

ST. JOSEPH IRON WORKS, St. Joseph, Michigan

"Canadian Woodworker" Buyers' Directory—Continued

TURNED WOOD GOODS
Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TURPENTINE
Carter, E. T., Toronto, Ont.

TWIST WORK
Klise Manufacturing Co., Grand Rapids, Mich.

UPHOLSTERY
Oriental Textiles Co., Oshawa, Ont.

UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Sturtevant, B. F. & Co., Galt, Ont.

VACUUM PUMPS
Smart-Turner Machine Co., Hamilton, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Guelph Patent Cask Co., Scotstown, P. Q.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Nickey Bros., Memphis, Tenn.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Standard Veneer Co., Portland, Me.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER CLIPPERS
St. Joseph Iron Works, St. Joseph, Mich

VENEER SAWS
Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.
St. Joseph Iron Works, St. Joseph, Mich.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

VENEER LATHES
St. Joseph Iron Works, St. Joseph, Mich.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

WALLBOARD
Ontario Gypsum Co., Paris, Ont.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Sawmill Co., Des Moines, Iowa.
Maus Lumber Co., Chas. O. South Bend, Ind.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Walnut Company, St. Louis.
Sullivan, Frank T., Buffalo, N. Y.

WASTE
Carter, E. T., Toronto, Ont.

WINDOW FRAME MACHINE
Atlas Mfg. Co., Orlando, Florida.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Pettingell Machine Co., Amesbury, Mass.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

Speed + Perfect Joints = Low Costs

The Taylor TRADE MARK

CLAMP CARRIER
for
Small Jobs in the Big Plant
All Jobs in the Little Plant

1. Natural standing position of operator.
2. No Juggling of heavy clamps.
3. No bending or walking.
4. No pile to overturn to get work glued first—simply move clamp one section.
5. Less space than equal number of clamps with work in, piled on the floor.

Any size to suit your work. 8 and 12-section wheel type. 16, 20, 30 and 40-section chain type. 4, 5 or 6 clamps per section for stock up to 42-in. wide.

Representatives:
A. R. Williams Machinery Co., Toronto, Canada

James L. Taylor Mfg. Company
Poughkeepsie, N.Y., U.S.A.

PANELS

PLAIN RED OAK 5 Ply

51	pcs.	3/8 x 30 x 60	G.2 S.	$3.25 each
29	"	3/8 x 30 x 72	"	4.00 "
18	"	3/8 x 24 x 60	"	2.75 "

1/4 CUT WHITE OAK 5 Ply

10	pcs.	3/8 x 24 x 60	G.2 S.	$3.50 each
33	"	3/8 x 21 x 72	"	4.20 "
23	"	3/8 x 30 x 72	"	5.25 "
40	"	3/8 x 25 x 68	"	4.20 "

UNSELECTED GUM 5 Ply

53	pcs.	3/8 x 24 x 66	G.2 S.	$2.75 each
33	"	3/8 x 24 x 60	"	2.50 "

SELECTED BIRCH 5 Ply

33	pcs.	3/8 x 30 x 72	G.2 S.	$2.75 each

ASH 5 Ply

2	pcs.	1/2 x 26 x 72	G.2 S.	$3.25 each

MAHOGANY 3 Ply

36	pcs.	1/4 x 12 x 72	G.2 S.	.90 each

VENEERED DOOR SECTIONS

1 3/4 x 5 x 6-10 Banded Edges	Pl. Red Oak	$2.25 ea.
	Pl. Red Gum	2.00 ea.
	1/4 Cut W.O.	2.65 ea.
1 3/4 x 15" x 2-6 Two sides	Pl. Red Oak	2.25 ea.
	Red Gum	2.00 ea.
1/8 Veneer Pl.	1/4 Cut W.O.	2.65 ea.

We solicit your enquiries for Clear Pine and Foreign Hardwoods and Fir Doors, for local shipments.

FIR 3 Ply

20	pcs.	1/2 x 36 x 66	G.2 S.	$3.25 each
4	"	1/2 x 26 x 56	"	2.00 "
2	"	1/2 x 36 x 72	"	3.60 "
133	"	3/8 x 24 x 72	"	1.75 "
29	"	3/8 x 30 x 72	"	2.25 "
37	"	3/8 x 30 x 60	"	1.80 "
5	"	3/8 x 24 x 72	G.1 S.	1.45 each
20	"	3/8 x 30 x 72	"	1.80 "
32	"	3/8 x 24 x 60	"	1.20 "
34	"	3/8 x 30 x 60	"	1.50 "
10	"	1/4 x 24 x 72	"	1.00 "
5	"	1/4 x 30 x 72	"	1.25 "

CHESTNUT 5 Ply

15	pcs.	3/8 x 30 x 72	G.2 S.	$4.00 each
15	"	3/8 x 24 x 72	"	3.25 "
36	"	3/8 x 24 x 60	"	2.75 "
18	"	3/8 x 30 x 60	"	3.50 "

LAMATCO 3 Ply Cottonwood

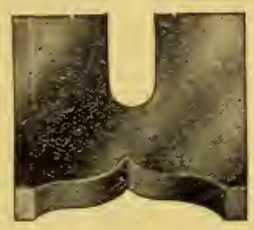
2	pcs.	5/8 x 24 x 60	G.1 S.	$2.00 each
143	"	1/8 x 24 x 60	"	.60 "
117	"	1/8 x 24 x 66	"	.65 "
100	"	1/8 x 32 x 60	"	.75 "
55	"	1/8 x 42 x 60	"	1.05 "
55	"	3/16 x 32 x 60	"	1.00 "
85	"	3/16 x 42 x 60	"	1.10 "
66	"	3/16 x 24 x 66	"	.90 "
78	"	3/16 x 32 x 66	"	1.20 "
66	"	3/16 x 42 x 66	"	1.75 "
76	"	1/4 x 42 x 60	"	1.75 "
50	"	1/4 x 32 x 66	"	1.50 "
3	"	1/4 x 32 x 66	Selects	1.25 "
7	"	3/16 x 42 x 66	"	1.25 "
46	"	3/16 x 32 x 66	"	1.00 "
6	"	3/16 x 24 x 66	"	.70 "
55	"	3/16 x 42 x 60	"	1.15 "
17	"	3/16 x 32 x 60	"	.85 "

GEORGE RATHBONE LTD., North Parkdale, Toronto

Established 1881

ATKINS

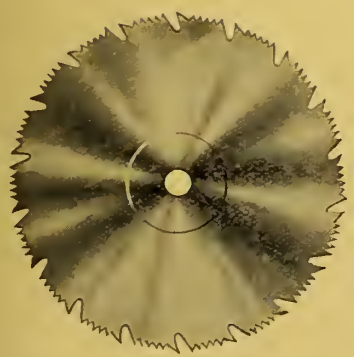
STERLING QUALITY SAWS and KNIVES ECONOMIZE



ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing

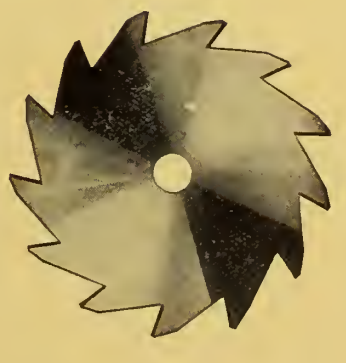
Atkins Sterling Quality Saws

and Machine Knives



Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.

Write to-day for our Knife Booklet "C.W." and Pattern Template Paper.



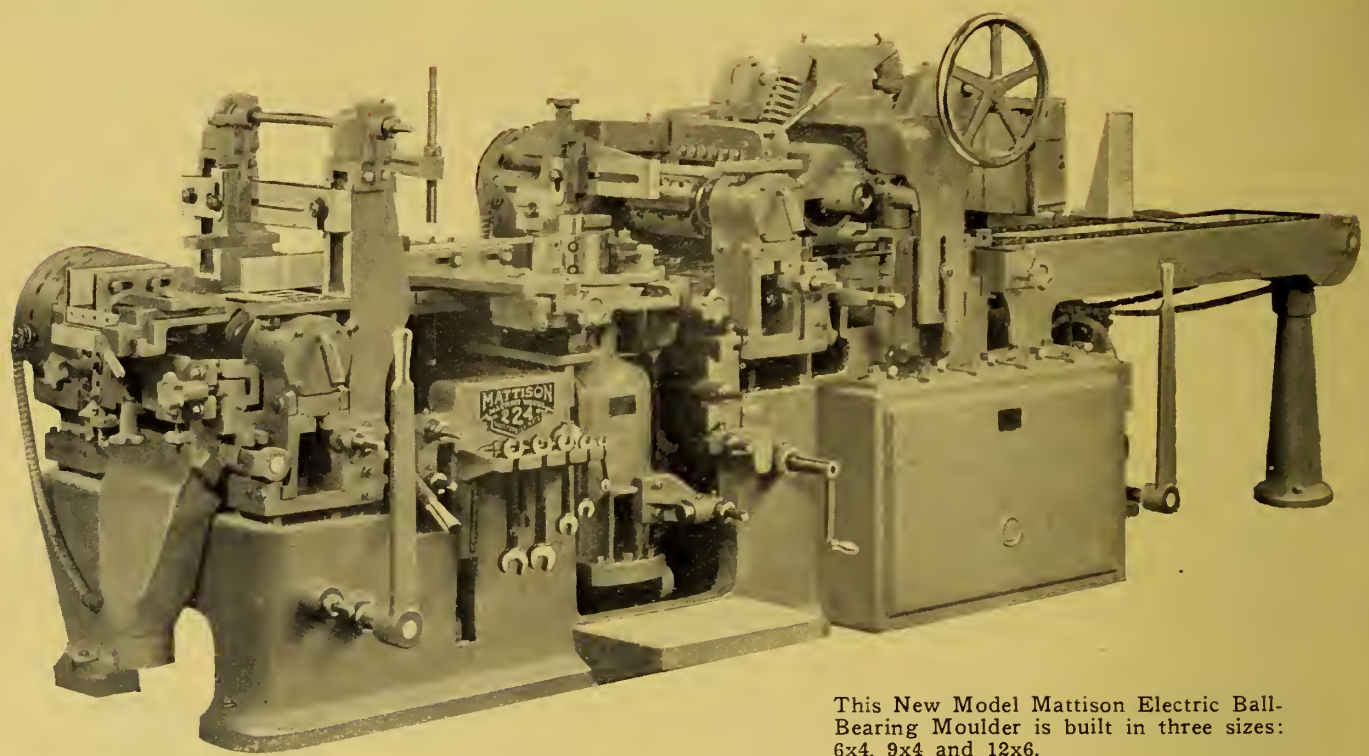
E.C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

The New Model Mattison Electric Moulder

entirely redesigned to take full advantage of the latest ideas in Motor Driven Moulder Construction



This New Model Mattison Electric Ball-Bearing Moulder is built in three sizes: 6x4, 9x4 and 12x6.

OUR several years' experience in building the Electric Ball-Bearing Moulder has given us the opportunity to develop many exclusive features, and refine the general construction of the machine into a finished product which at once stamps the New Model as the most advanced type obtainable.

Individual cutterhead motors are built right into the machine with no overhang. Motor control is of the latest and most improved type, having been specially developed for the Mattison Moulder. A four-speed motor drives the upper and lower feed rolls through separate trains of gears.

This new moulder is given utmost accessibility to quicken changes and setups. Outside bearings on top and bottom head spindles are removed by loosening one clamping lever; chip-breaker is raised entirely clear of top head; rear table swings down leaving the machine wide open with no obstructions to interfere with the free handling of cutterheads of any diameter.

We have spared no expense in accumulating the ideas and suggestions of the foremost moulder operators. Combining these ideas with expert engineering talent and careful manufacturing methods, enables us to offer this New Model Electric Ball-Bearing Moulder with positive assurance that it will successfully meet every requirement of intense production in capacity, quality of work, accessibility and mechanical service.

MATTISON
MACHINE WORKS
Rockford, Illinois, U.S.A.

Volume Twenty Three TORONTO, April, 1923 Number Four

CANADIAN
WOODWORKER
and
Furniture Manufacturer

Simple *Substantial* *Efficient* *Practical*

BELT SANDER 319

Adjustable for any length of stock.
Proper sanding tension automatically maintained.
Table 5½′ or 8′ x 30″, equipped with roller bearings.
Vertical adjustment 11″.

COWAN WOODWORKING MACHINES

Built Right,
Run Right,
Give Satisfaction

Ball Bearings and Motor Drive if desired.

COWAN & COMPANY OF GALT LIMITED

GALT, CANADA

Alphabetical Index to Advertisers, Page 12

OUR NAME AND TRADE MARK

What They Mean to You

First of all it means Alcohol—for every manufacturing use—alcohol that is standardized to meet each specific need with a specific grade—alcohol with a definitely established quality to answer perfectly your exact requirements.

And in addition it means you are doing business with an organization—not only the largest in Canada devoted to the distilling of alcohol for industrial purposes—but one constantly finding new ways to be more useful and more serviceable to the trade.

Manufacturers of

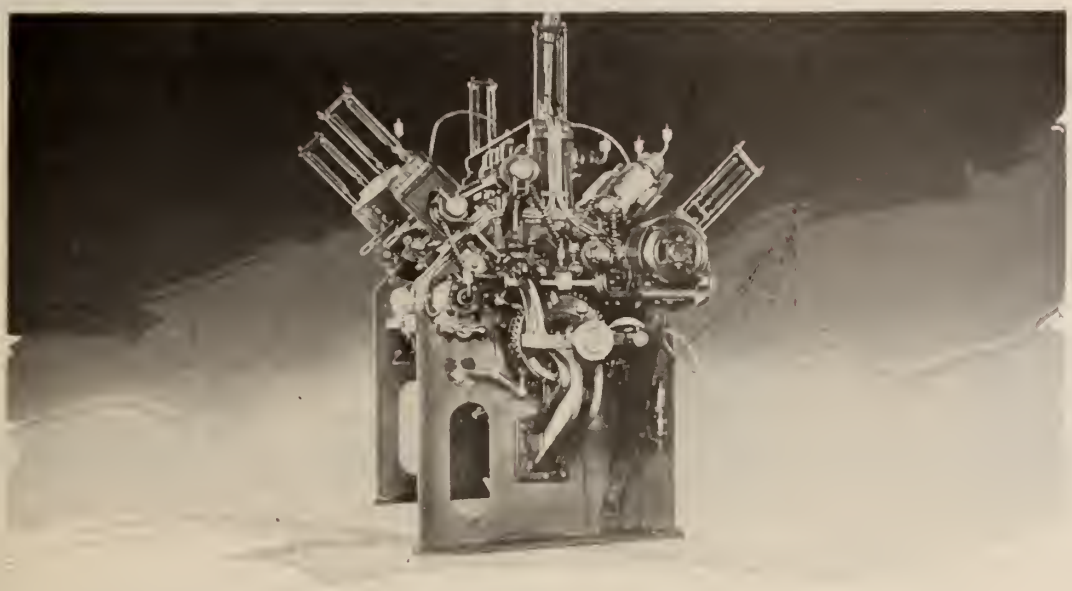
MAPLE LEAF BRAND

Ethyl Alcohol—Cologne Spirits—Absolute Alcohol, B. P.
Methylated Spirits and Denatured Alcohol (all formulae)

Distributing Warehouses:

MONTREAL TORONTO WINNIPEG VANCOUVER

SKF



43 Self-Aligning Ball Bearings Help Speed this Automatic Woodworker

ACCURACY and reliability of the intricate parts is the paramount requisite in complicated, high-speed automatic machinery.

For the exacting duties demanded, **SKF** marked self-aligning radial and thrust ball bearings best meet these requirements. Being practically frictionless in operation, no measurable wear occurs. As a result, all shafts and tools are kept in their true settings which is so vital to accurate work.

Even misalignment cannot affect the smooth running qualities of this type of bearing, for like a ball and socket joint it is free to turn in any direction without binding strains.

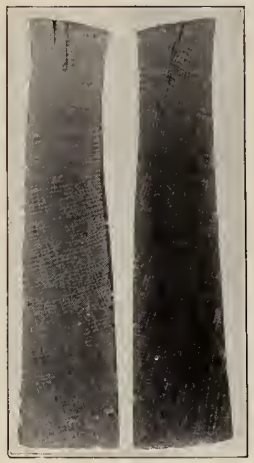
And where bearings are numerous, the fact that ball bearings require no adjustment and need oil only at infrequent intervals means a considerable saving in time and labor.

Regardless of the numerous parts, ball bearings reduce maintenance and permit a better product and increased production.

CANADIAN **SKF** COMPANY, LIMITED
TORONTO — MONTRAEL

Normal View *Deflected View*

Dollars and Sense In Kiln Drying Lumber

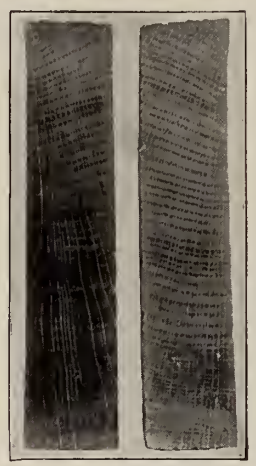


Photograph of oak planks, typical run of hand regulated kiln.

?

What Does This Waste Mean To Your Bank Balance

?



Photograph of average results from Powers automatically-regulated kiln.

Hand control of kiln temperatures results in warped and checked lumber, which means waste. Automatic control of temperature and humidity results in lumber evenly and thoroughly cured, without warping or checking.

The Powers Regulator automatically controls temperature and humidity, and saves from a quarter to a third of the time in kiln-drying lumber. **It regulates profits upwards.**

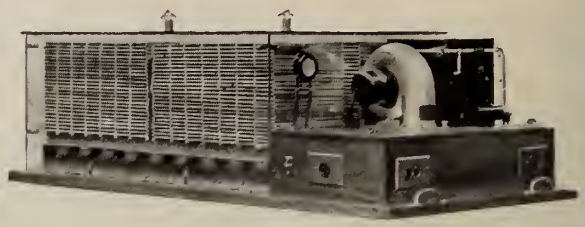
Write for Powers Bulletin on the Control of Temperature.

The Canadian POWERS REGULATOR Co Ltd
Specialists in Automatic Heat Control

106 Lombard Street — Toronto, Ont.

Calgary, Alta. Halifax, N.S. Montreal, Que.
Vancouver, B.C. Winnipeg, Man.

(2207)



Warping Checking Case Hardening

eliminated in plants where lumber is dried by Sturtevant High-Humidity Kilns.

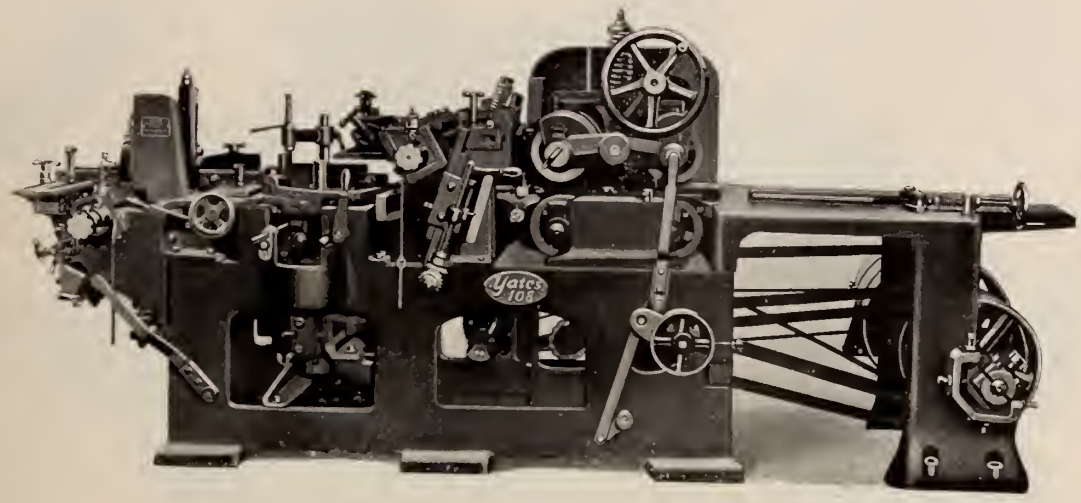
These production economies mean quicker turnover and greater profits.

Sturtevant engineers tell you in Folder 602 just which installation will speed production and save you the most money.

B. F. Sturtevant Company of Canada, Limited

Montreal - Galt - Toronto

Sturtevant
PUTS AIR TO WORK



AN ALL 'ROUND MACHINE

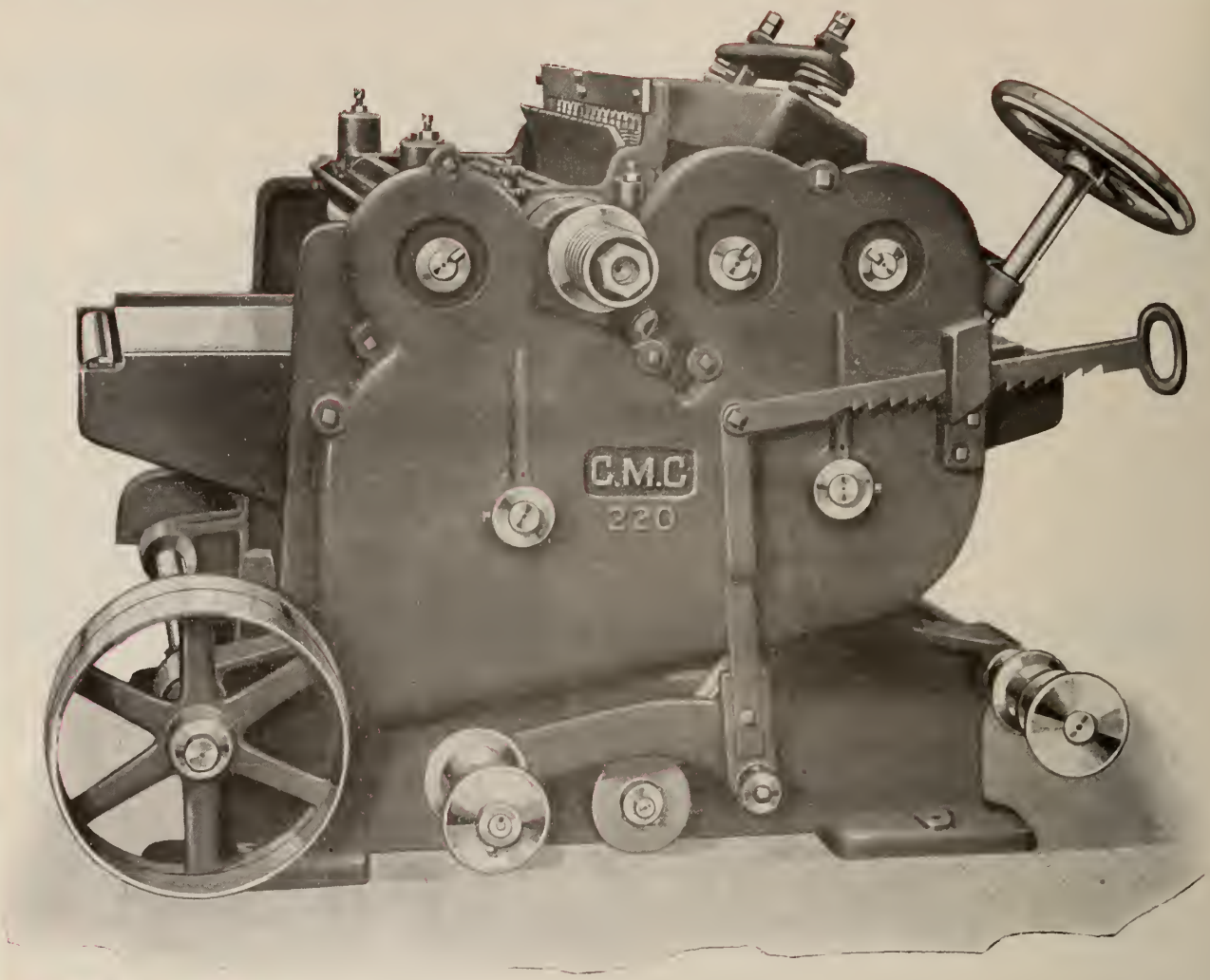
Production of complicated mouldings, four-sided surfacing, plain or patterned, tongue and grooved, base boards, dowel stock, flooring and matching is simple for Yates No. 108 Moulder. This machine is doing a wider variety of work than any moulder in the world. The 108 is built just for this sort of work, and does it faster and more economically than other types of machines.

All adjustments are made easily, and are placed within easy access of the operator. The No. 108 is built in three sizes 10, 12 and 15 inches wide. Takes stock 8 inches thick 1/8 inches thin and produces an excellent fine finish.

Upon request we will mail you circular, which illustrates and describes this machine in every detail.

P. B. Yates Machine Co. Ltd.
HAMILTON — ONTARIO

WORLD'S LARGEST MANUFACTURERS OF WOODWORKING MACHINERY



C.M.C. No. 220 Single Surfacer

Another triumph of achievement by CMC Designers and Engineers. The No. 220 is our latest Single Surfacer, built with that exacting thoroughness of design and construction which characterizes all CMC Machines.

Experience counts. Our long experience in the manufacture of Woodworking Machinery has enabled us to offer in this Machine a **SUPER SINGLE SURFACER** with good features not found in other makes.

Built 24″, 30″ and 36″ wide, all 8″ deep,
With babbitt or ball bearings,
With plain, seclional or divided rolls,
For belt or direct motor drive, and
With electric grinding nnd jointing attachment.

Write for fully detailed bulletin.

CANADA MACHINERY CORPORATION, GALT, ONTARIO
LIMITED

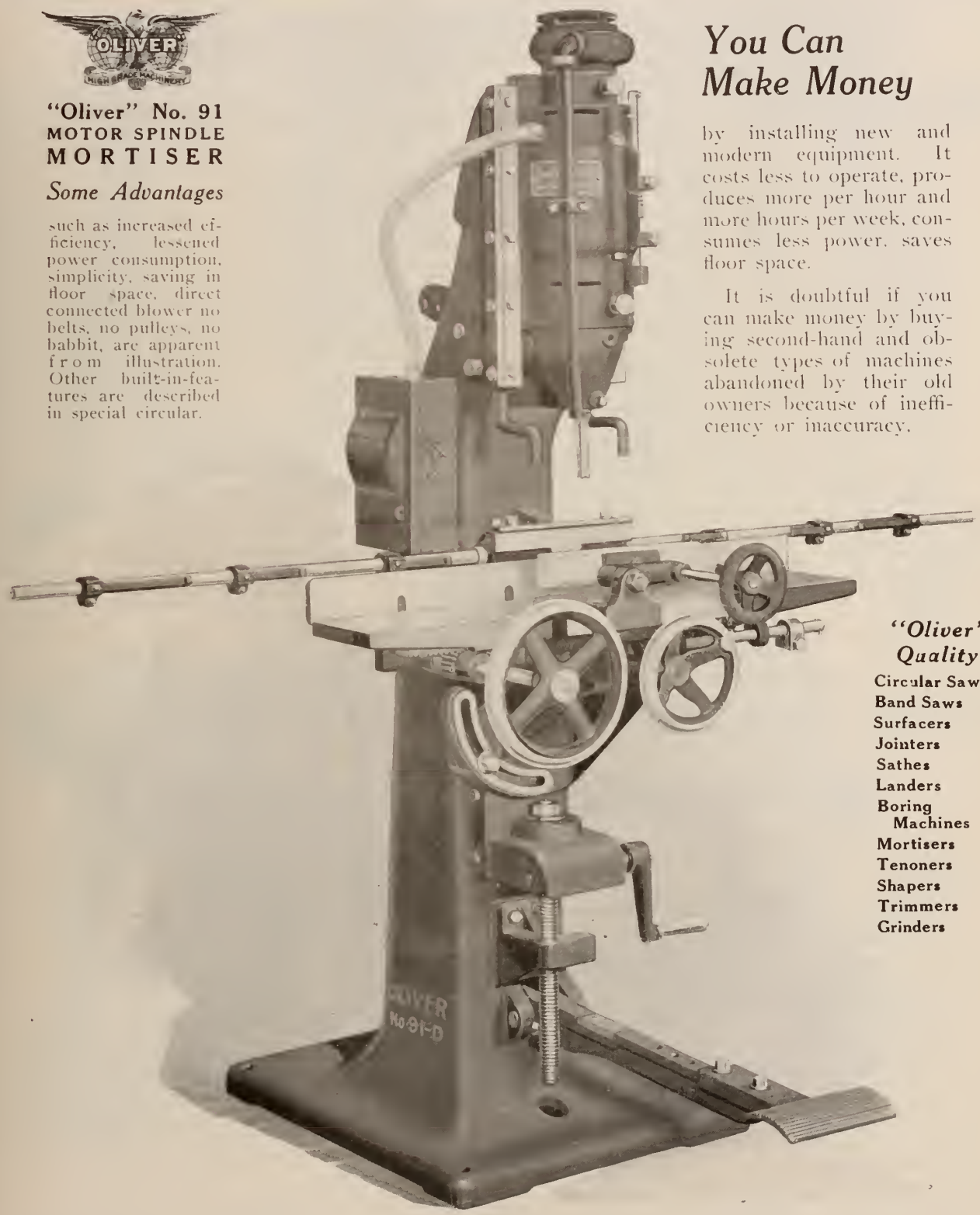
Manufacturers of Iron and Wood Working Machinery.

Toronto Sales Office - 721 Bank of Hamilton Building

"Oliver" No. 91
MOTOR SPINDLE
MORTISER

Some Advantages

such as increased efficiency, lessened power consumption, simplicity, saving in floor space, direct connected blower no belts, no pulleys, no babbit, are apparent from illustration. Other built-in-features are described in special circular.



You Can Make Money

by installing new and modern equipment. It costs less to operate, produces more per hour and more hours per week, consumes less power, saves floor space.

It is doubtful if you can make money by buying second-hand and obsolete types of machines abandoned by their old owners because of inefficiency or inaccuracy.

"Oliver" Quality

Circular Saws
Band Saws
Surfacers
Jointers
Sathes
Landers
Boring Machines
Mortisers
Tenoners
Shapers
Trimmers
Grinders

Let us send you complete specifications

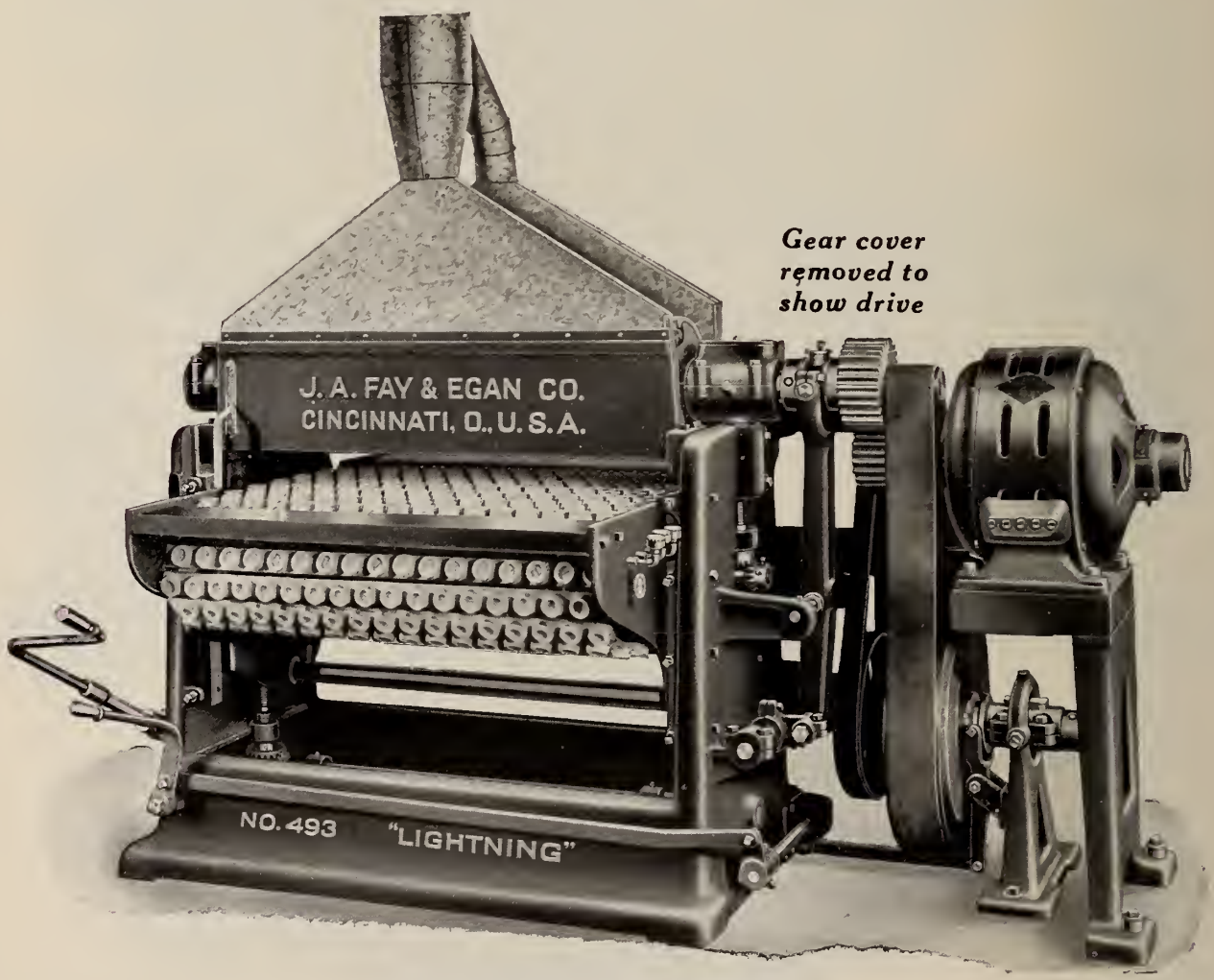
Oliver Machinery Company

Grand Rapids, Michigan, U.S.A.

Rockbottom Cost of Sanding a Multiplicity of Short and Narrow Stock

No. 493 "Lightning" Single Drum Endless Bed Sander

Where the work does not justify installing a two or three drum machine
Faster Work—Less Power—Less Sand Paper—and, original cost much less



Gear cover removed to show drive

Either Belt or Direct Motor Drive

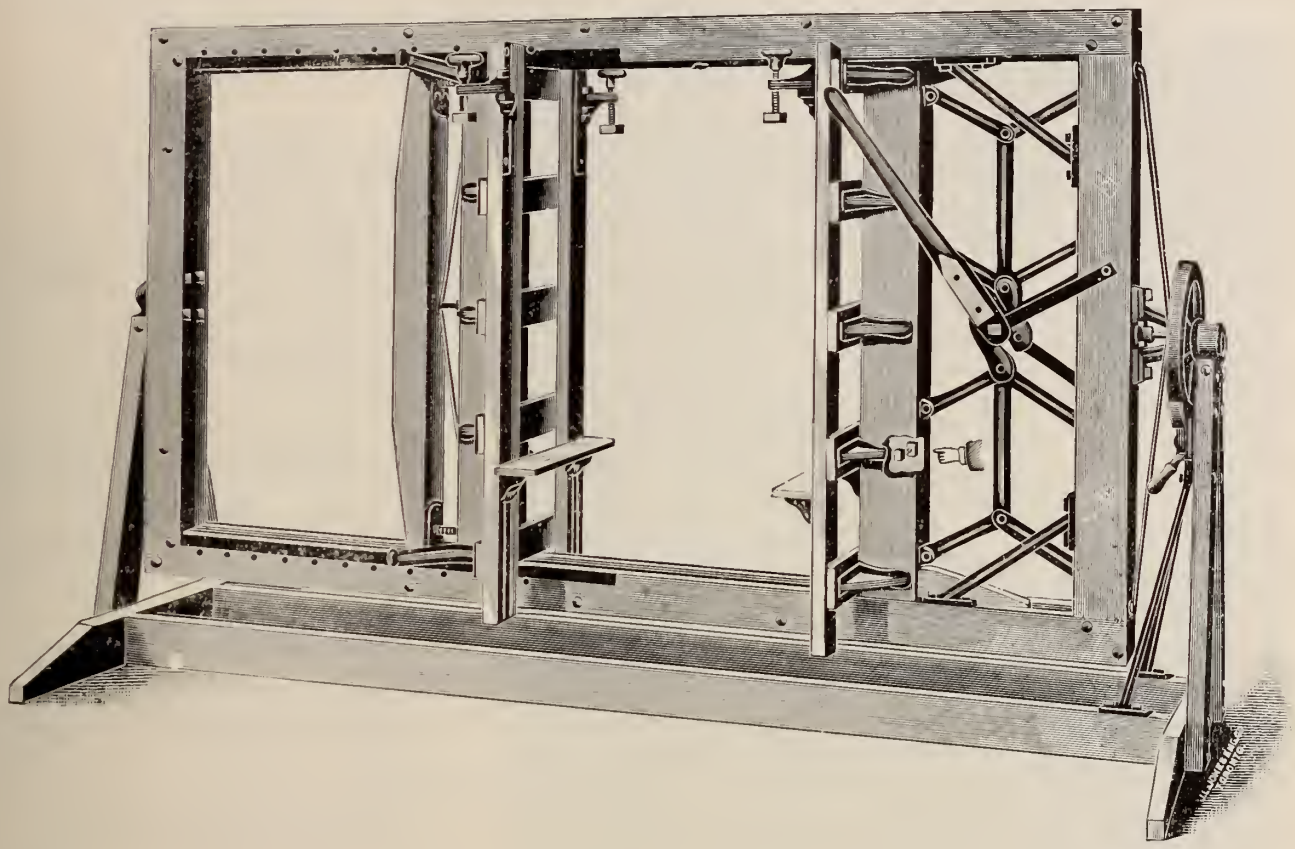
J. A. Fay & Egan Company

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

153-173 W. Front St. - - Cincinnati, Ohio, U. S. A.

Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.
Branches: Montreal, St. John, N. B., Winnipeg, Vancouver



No. 306 Revolving Case Clamp

For use on all style Cabinets and Cases

Production in the cabinet room will be more than doubled when this Revolving Case Clamp is used. Cabinets are also saved from damage through rough handling. The action of this machine is particularly smooth and it is operated by one man, all parts of the case being accessible from the front of the machine. Clamp can be stopped instantly in any position by means of brake.

It accommodates a wide range of sizes, for one end is movable to any position. Case is tightly clamped by means of a large hand lever.

Construction is of seasoned maple, reinforced with steel and iron.

Made in three standard sizes — Write for particulars

Jackson, Cochrane & Company

Manufacturers of Woodworking Machinery : **KITCHENER, ONTARIO**

A battery of 12 "Preston" No. 186 Manual Training Speed Lathes as installed at the Central Technical School, Toronto. They can be arranged either for Group Drive or Individual Motor Drive

In Almost Every Technica School in Canada Today Will Be Found "Preston" Woodworking Machinery

Another battery of "Preston" Lathes and a Preston Double Arbor Tool Grinder as installed in the Central Technical School, Toronto

Following is a list of Preston Machines in the Central Technical School, Toronto:

23 Manual Training Lathes.
3 Band Saws.
3 Saw Tables.
2 Buzz Planers and Jointers.
1 Ball Bearing Shaper.
1 Sander.
1 Power-Feed Saw.
1 Roller-Top Saw Table.

All these machines have ball bearings and individual motor drive.

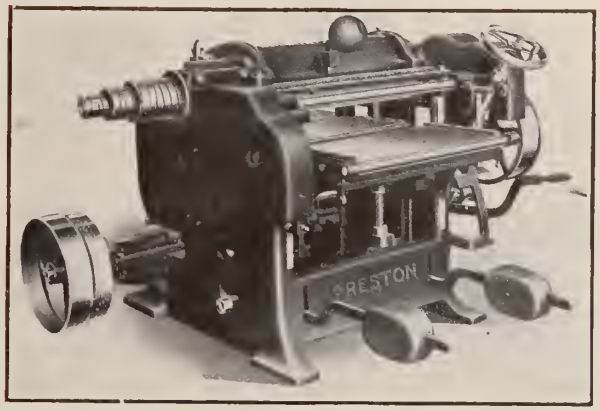
The Preston Woodworking

PRESTON, ONT.,

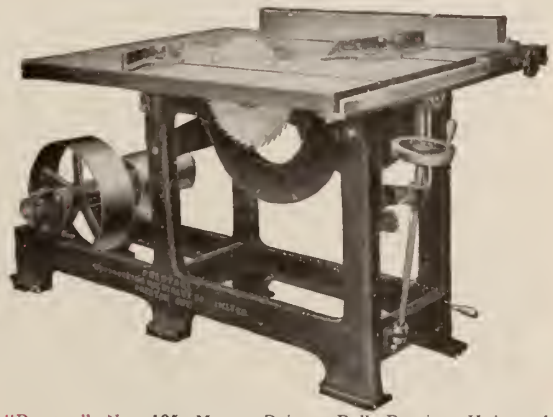
FOR the past twelve years we have specialized in the particular class of Woodworking Machinery required for Technical Schools. Unceasing effort on our part has kept us fully abreast of the times and in almost every instance where a school was in the market we have been able to prove to them that our machines were best suited for their needs. We might mention the following schools where our equipment is in use:-

Toronto, Hamilton, Ottawa, Niagara Falls, Sudbury, Sarnia, Windsor, Chatham, Woodstock, Fort William, London, Prince Rupert, B.C. and Chilliwack, B.C.

We are perhaps better posted on the Woodworking Machinery requirements of a Technical School than any other concern in Canada. We offer you **the accumulated result of our years of experience.** All our stock of valuable information is freely at your disposal and we know that schools just starting can save themselves a lot of **expensive trouble** by availing themselves of this offer which we make freely and without any other obligation than possibly a chance at their business when they are in the market.



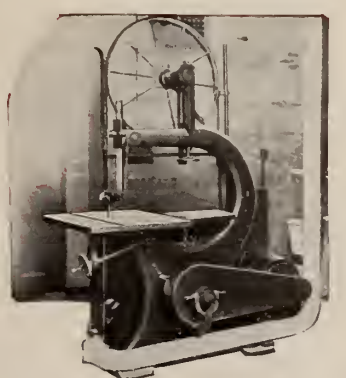
"Preston" No. 121 Pony Planer of improved design, as now installed in various technical schools



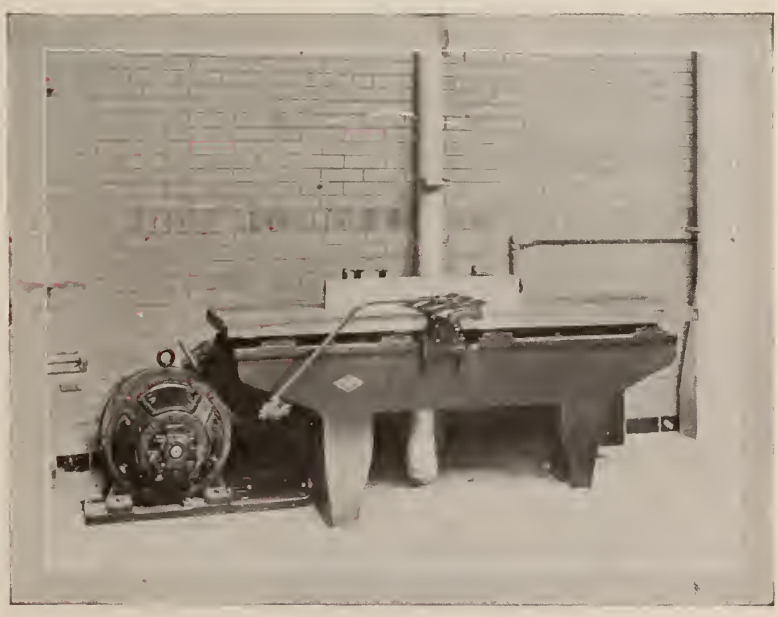
"Preston" No. 125 Motor Driven Ball Bearing Universal Saw Table as installeld in almost every school

We have just completed a shipment to the new Hamilton Technical School of 18 No. 186 Manual Training Lathes and 1 Double Arbor Tool Grinder.

To appreciate better the superior construction of these machines you should send for complete description.



"Preston" No. 132 36-inch Ball Bearing Motor Driven Band Saw as installed in nearly every school mentioned.



"Preston" No. 143 Motor Driven Ball Bearing Buzz Planer and Jointer, as installed at the Central Technical School, Toronto

Machinery Company, Limited
CANADA

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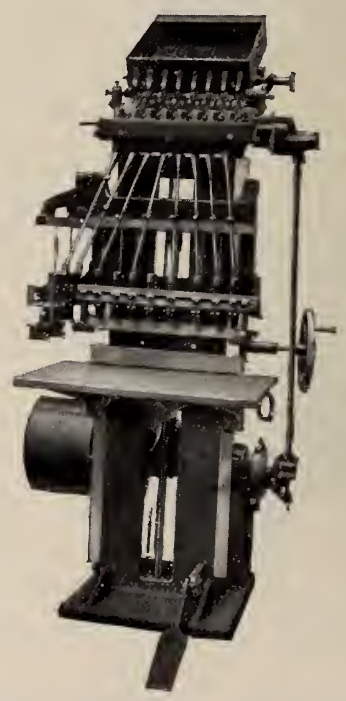
NAILING AND CLEATING MACHINES

THIS ILLUSTRATION SHOWS OUR LATEST TYPE 8 TRACK SIDE ARM NAILING MACHINE. IT IS FITTED WITH AN IMPROVED OPEN FEEDER WHICH GIVES EASY ACCESS TO THE NAILS. THE DRIVING SHAFT RUNS IN BALL BEARINGS.

WE MAKE MANY OTHER SIZES AND STYLES.

LET US KNOW YOUR NAILING PROPOSITIONS AND WE WILL RECOMMEND THE MOST SUITABLE MACHINE TO GIVE YOU THE RESULTS YOU DESIRE.



Matthew Wylie & Co. Ltd.
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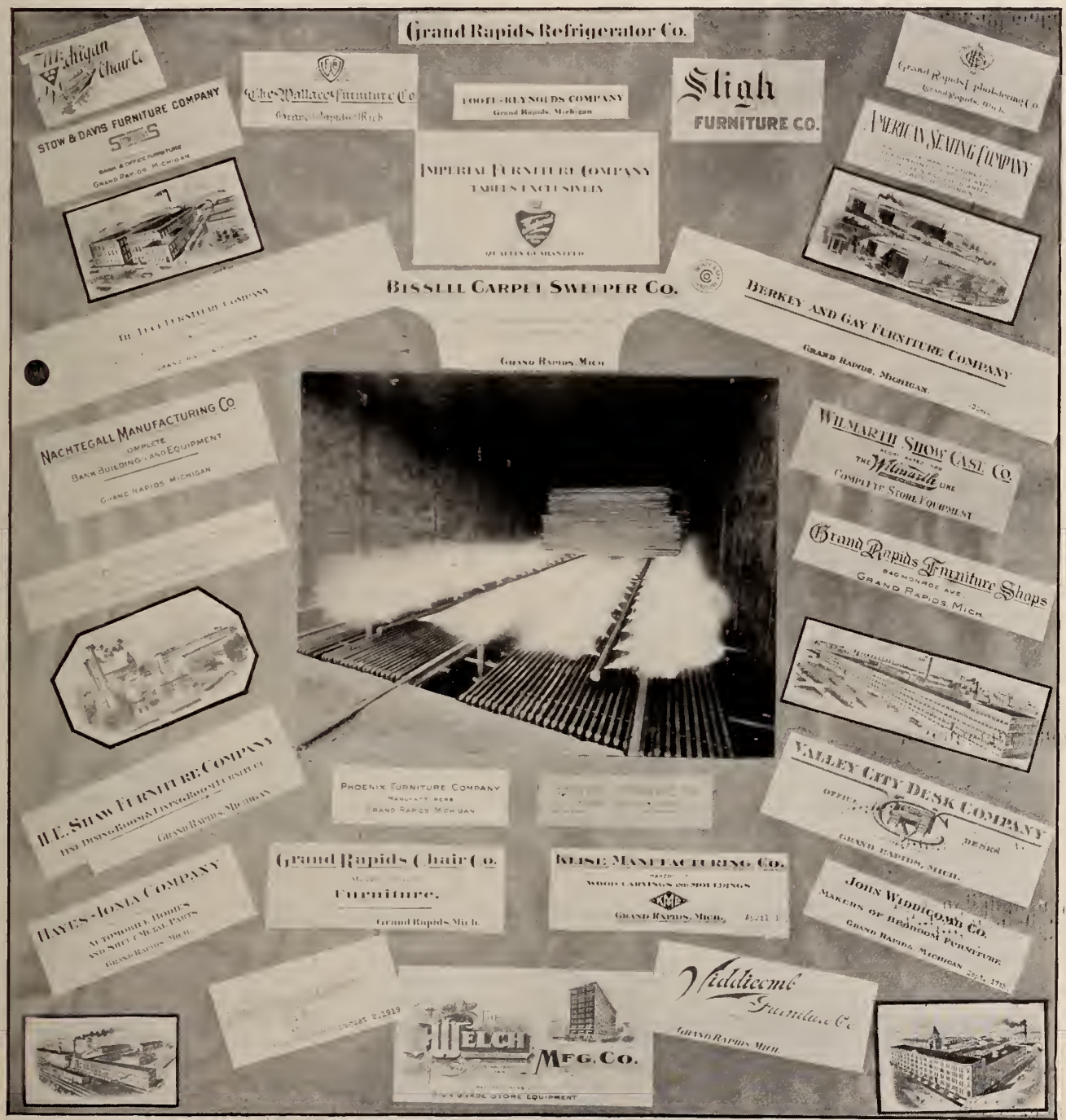
CABLE ADDRESS "PARALLEL"

A Few Local Users of the GRAND RAPIDS VAPOR KILN



During 1921 and 1922 forty-one per cent of our business came from repeat orders. Repeat orders, it must be remembered, mean additional installations of dry kilns. We believe you will concur with us in the belief that this is rather conclusive evidence of the complete satisfaction resulting from installations made by the Grand Rapids Vapor Kiln.

GRAND RAPIDS VAPOR KILN ::: Engineers—Manufacturers—Contractors

Main Office and Factory—GRAND RAPIDS, MICH.

Represented on the Pacific Coast by E. F. TINDOLPH, 5539 White Henry Stuart Building, Seattle, Washington

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The Canadian Appraisal Co. Limited

The Pioneer Appraisal Organization of Canada

Established 1905

"An adjustment of fire insurance in accordance with existing values is a universal necessity. Many people who now believe that they are properly covered against the fire risk are, in reality, inadequately covered. Morever, realization of these facts is by no means general."

The Chronicle

Over 85% of the appraisals made during the past fifteen years of Canadian manufacturing and industrial properties have been carried out by us, aggregating some 5.000. properties, and include over 250 lumber and woodworking plants.

Correspondence invited

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Royal Bank Building

MONTREAL
364 University Street

Dominion Appraisal Company Limited

The Test of An Appraisal

"We have never been so grateful for anything we have done as for the appraisal made by you in December 1919. It certainly was worth thousands of dollars to us in the adjustment of the fire."

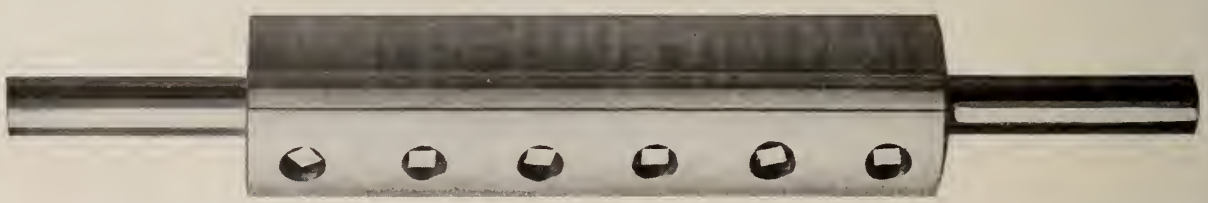
Port Arthur Daily News Limited
May 5th, 1921

Our staff of qualified appraisers—men with many years experience in the appraisal field—and our system of careful supervision of all work entrusted to our care has afforded protection to our large clientel extending throughout the Dominion of Canada.

We solicit your correspondence

8-10 Wellington Street East
TORONTO, ONT.
Telephone Main 646.

The Shimer Round Safety Cylinder with High Speed Knives



A Round Safety Cylinder that will Appeal to the Buyer and the User for three Reasons:

The first is our adjusting nut for setting the knives. It is the only cylinder with properly located adjusting nuts for setting the knives, which, with our way, can be set to 1-1000 of an inch.

The second is our way of holding the knife without tapping into the head.

The third is the correct angle of cut for the knives.

Made for any of the different Makers' Machines and in Any Length Cylinder

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SHIMER CUTTER HEAD CO., OF CANADA, LIMITED

Manufacturers of Cutter Heads, Safety Cylinders and Grinders

GALT, ONTARIO

Don't be April-fooled by "Claims"

ASK USERS DIRECT

If it's kilns, ask the man who uses them—our list of users is gladly sent to you; if you want to investigate results—get it, and our Book on Kilns.

The STANDARD
Dry Kiln Company

1542 McCarty St., Indianapolis, Ind.

New and Used Woodworking Machinery

We can save you money—look over our partial list and if you do not see your requirements—Write, wire or phone us.

Shaving Exhausters
50" American Blower Co., 16" Outlet.
45" American Blower Double.
No. 1 Buffalo.

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7" 4 Sided Goldie McCullough.
7" 3 Sided Cowan & Co.
12" 4 Sided Cowan & Co.

Shapers
Combination Jig Saw and Shaper Elliot.
2 Spindle Shaper.

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24" Major Harper Poney Planer.
30 x 12" McGregor Gourlay Double Surfacer.
12" Buzz Planer.
14" Planer and Matcher.

Mortisers
Power Stroke Mortiser Cowan & Co.

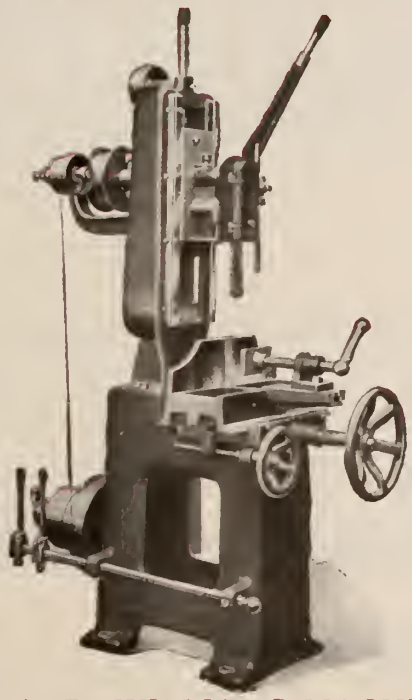
Band Saws
20" Crescent Band Saw.
28" Elliot Band Saw.

Trim Saws
Variety Trim Saw.

Agents for Elliot Woodworkers.

GENERAL MACHINERY CO.
67-69 Frederick St., TORONTO
TELEPHONE MAIN 2200W

SMITH'S CHAIN MORTISER



MADE IN ENGLAND

You can save money on shop equipment. Why not combine efficiency with economy. Practically two separate standard machines combined in one at less than the price of a single machine. High grade construction, phospor bronze bearings throughout. Hollow chisel mortising attachment fitted with Hoffman Ball Bearings.

A. R. WILLIAMS MACHINERY CO., LTD.
Phone Woodworking Machinery Dept., Adelaide 20
Full lines of Iron and Wood-Working Machinery, Boilers, Engines and Contractors' Machinery, Electric Motors, Saw, Shingle and Lath Mill Machinery, etc.
HALIFAX, N.S. ST. JOHN, N.B. MONTREAL, P.Q. TORONTO, Ont. WINNIPEG, Man. VANCOUVER, B.C.

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You have tried the rest, now use the best.

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Watertown, Wisconsin, U.S.A.

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A Worth-While Compressor

—a heavy, substantial machine, liberally proportioned, and accurately built. It is self-contained, and may be set on light foundations or strong floor.

Compact and Strong

This type is built both single and double cylinder, and developes pressures up to 125 pounds. Both the head and cylinders are water-cooled; giving approximately 80% more cooling surface than in double-acting machines.

Unloading Governor may be set to operate at different pressures. The suction valves are automatically held open when desired pressure is obtained.

This illustrates our No. 225
SINGLE ACTING AIR COMPRESSOR

What type of air-compressor do you need? Write us.

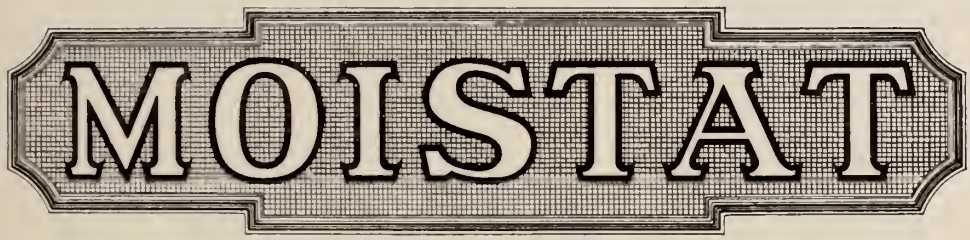
The Smart-Turner Machine Co., Ltd.

Hamilton Canada

TWENTY-TWO YEARS

lead to the development of the

NATIONAL



KILN

By the purchase of a **National Moistat Kiln** you not only buy the most modern kiln in the world, but you buy a kiln with a reputation that is the envy of competing manufacturers.

Ask for list of users and Records of Performance

THE NATIONAL DRY KILN COMPANY

1117 East Maryland Street, Indianapolis, Indiana

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that well known line
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Sand and Garnet Papers and Cloths
in Reams and Rolls
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Order from your jobber or the sole distributors

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BRANCH OFFICES:
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When used in describing a **Cannon Glue** is more than a claim. It is an established **fact!**

We have customers in Canada who have used one brand for fifteen to twenty years without one cause for complaint.

CANNON CANADIAN CO., LTD.
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1832-34 South Clark Street **CHICAGO, ILL.**

COIGNET FRENCH GLUES

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Scientifically Graded

Each Sheet Stamped with Grade Name or Number

Uniformity Guaranteed

Stocks Carried at Montreal

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Keep the GUESS out of GLUE WORK

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Mixes cold in cold water.

Economical —Spreads well.

WATERPROOF GLUE

UNIFORM STRONG HEAT-RESISTANT RELIABLE

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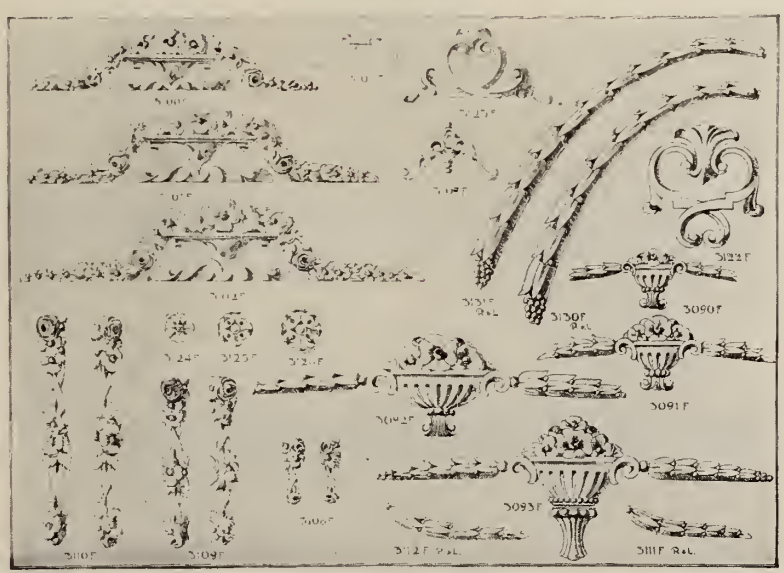
Largest Manufacturers of Imitation Wood Carvings in the World Quality the Best. Prompt Shipments



Unlimited Facilities for Manufacturing High Grade Wood Carvings in Composition and Wood Fibre

Reproductions of Exclusive Designs Our Specialty

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2543 ARCHER AVENUE, CHICAGO

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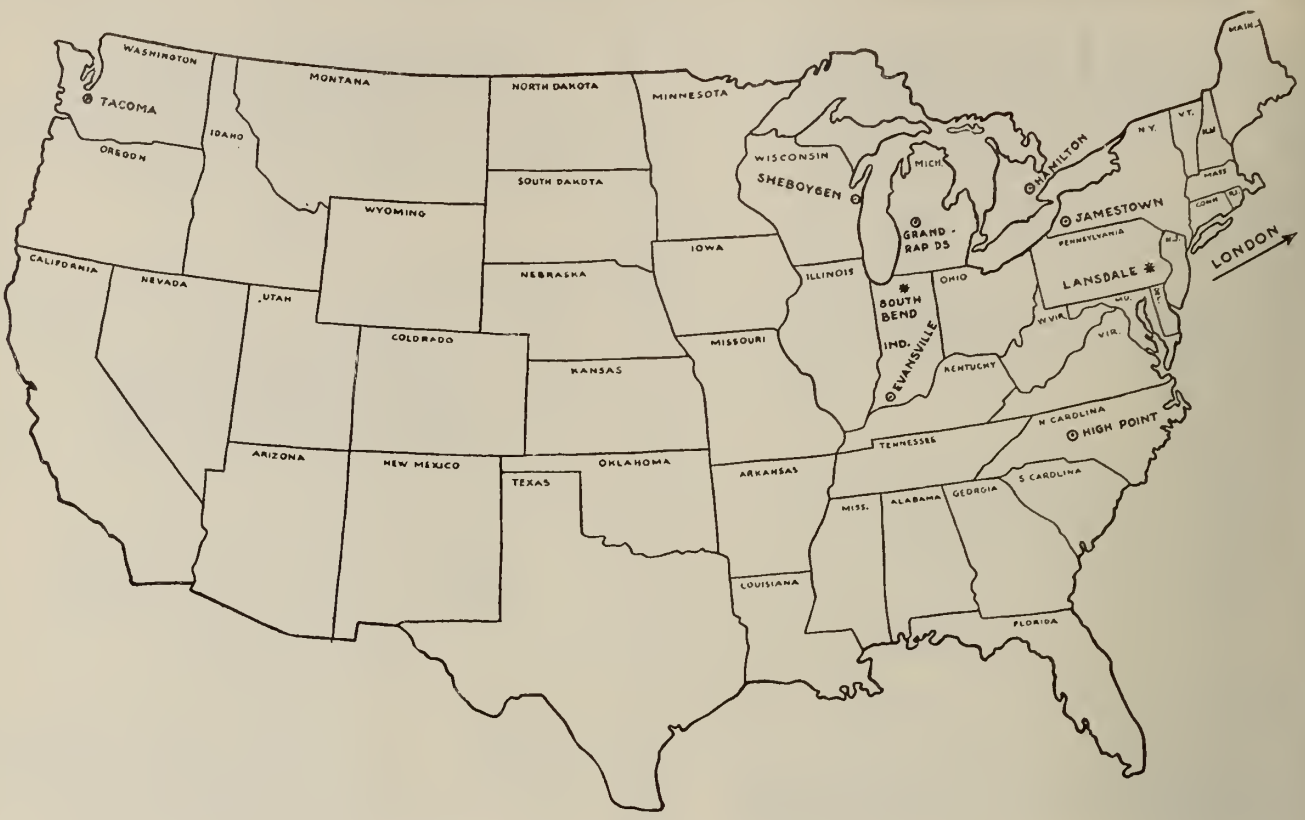

Showing Ten Distributing Points

Send your orders to us at South Bend, Indiana, for

PERKINS

183

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REG. U. S. PAT. OFF.

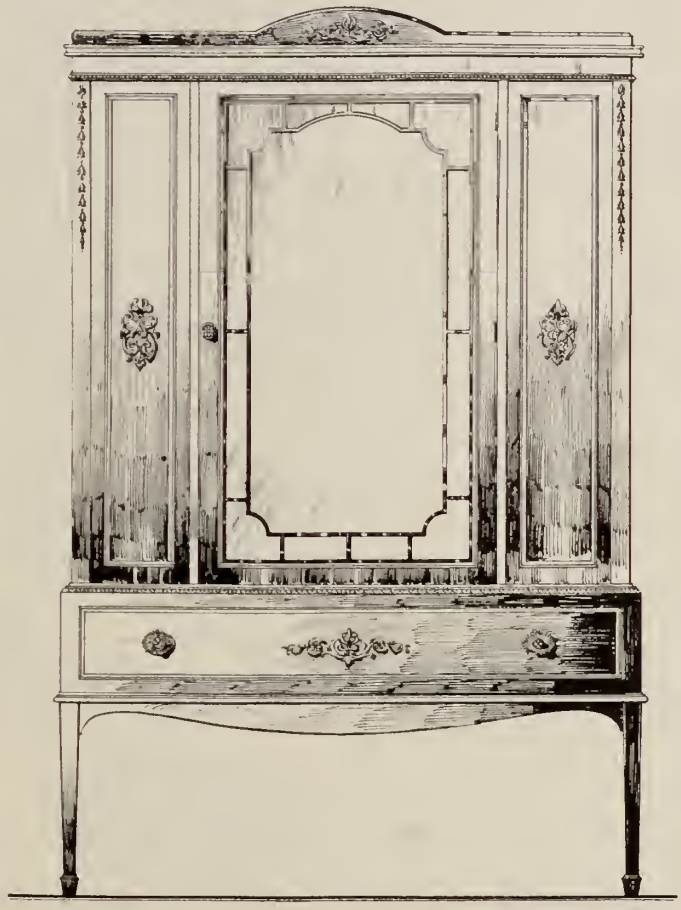
and we will ship at once from best point shown on above map. Prompt service and uniform quality distinguishes our business and product.

Patents covering Perkins Glue have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy, and other foreign countries.

PERKINS GLUE COMPANY

Factory and General Offices:
Lansdale, Pennsylvania

Sales Office:
South Bend, Indiana



We have a designing service in conjunction with our great variety of ornaments.

The chief of our service department is a practical designer, a clean penman who will help you attain individuality and character in your various numbers.

We can furnish scale drawings, plain or ornamented, perspectives, single or in groups.

This service is at your command.

JOHN WALTER & SONS LIMITED

KITCHENER :-: ONTARIO

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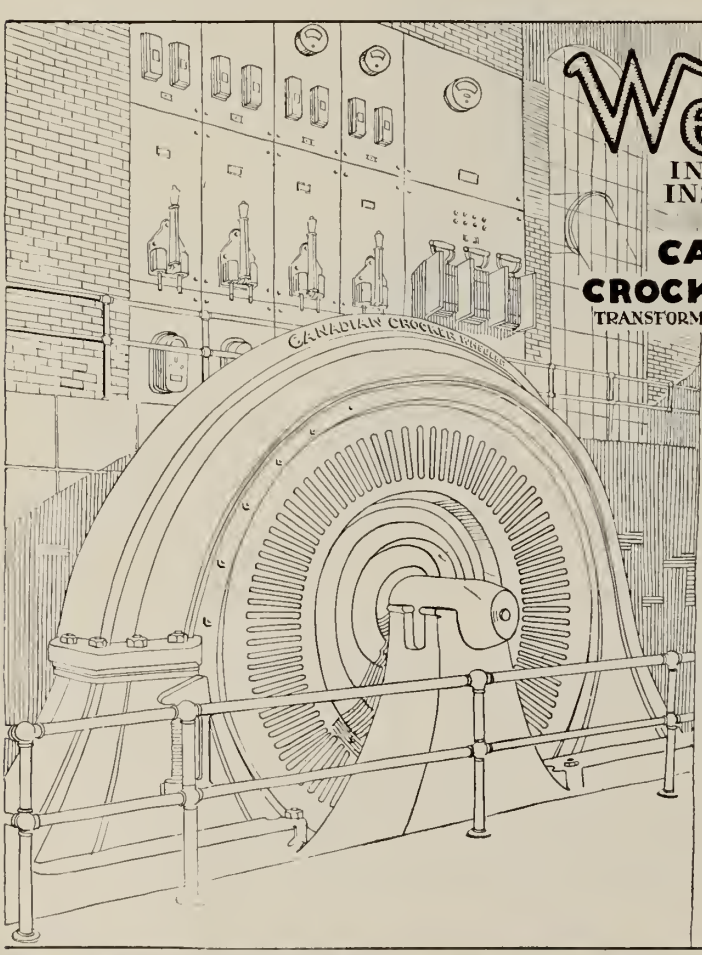
OF ESTABLISHED REPUTATION AND DEPENDABILITY



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Wagner
SINGLE PHASE MOTORS

ELECTRICAL ENGINEERS EQUIPMENT CO. THREE CHICAGO U.S.A.
SWITCH BOARD & PROTECTIVE FITTINGS

Northern Electric Company
LIMITED

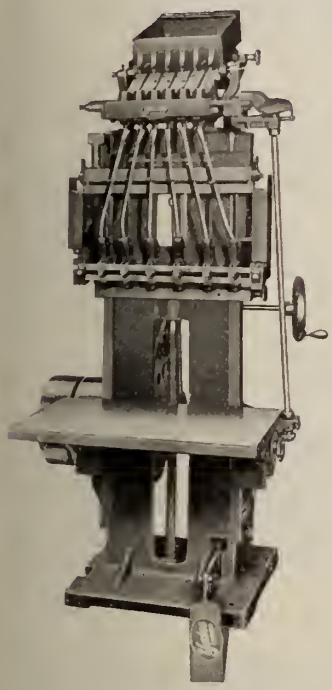
MONTREAL	TORONTO	WINDSOR	CALGARY
HALIFAX	HAMILTON	WINNIPEG	EDMONTON
QUEBEC	LONDON	REGINA	VANCOUVER

"Makers of the Nation's Telephones"

MANUFACTURING
Manual Telephones
Automatic Telephones
Wires & Cables
Fire Alarm Systems
Radio Sending and Receiving Equipment

DISTRIBUTING
Construction Material
Illuminating Material
Power Apparatus
Household Appliances
Electrical Supplies
Power & Light Plants
Marine Fittings

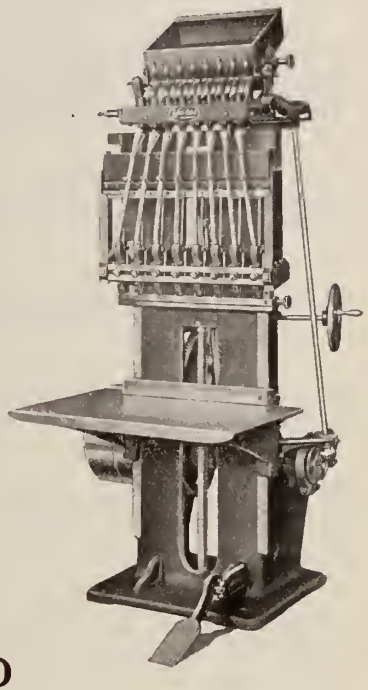
NAILING MACHINES



which will do your nailing, quicker, better and cheaper than was ever thought possible by hand.

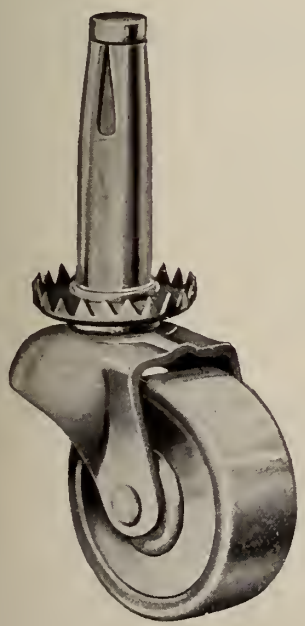
Latest improved head. Single or double row chucks. With or without clincher. Belt or Direct motor drive. Open and Closed Back types. Built in different sizes.

Upon request, we will send you complete details about these machines.



P. B. Yates Machine Co. Ltd.
HAMILTON - ONTARIO

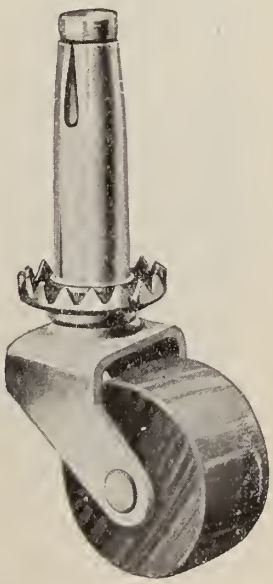
"National" Castors



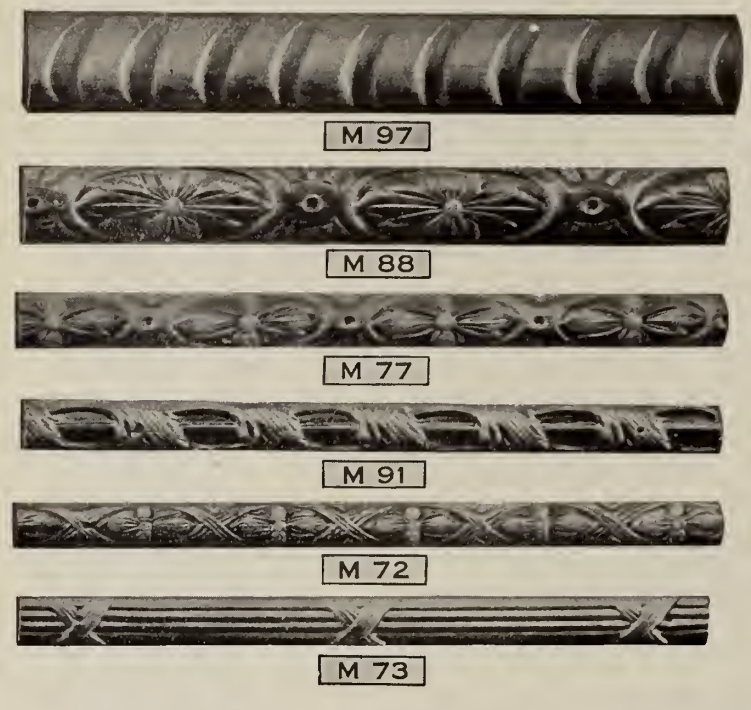
"National" Castors are strictly Canadian products of the highest quality, manufactured to meet the requirements of the Canadia trade.

Our No. 5 and No. 6 Bell Horn Castors (illustrated at the left) and our No. 3 Plain Horn Castor (illustrated at the right) are kept in stock in large quantities ready for immediate delivery. They are obtainable in Lignum Vitae, Plain Steel and Plated Finishes in both Nickel Plate and Brass. Put up in barrel or broken packages, with standard shanks and sockets.

Prices gladly quoted.



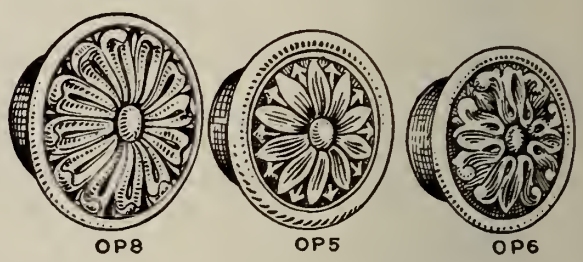
National Hardware
Company Limited
Orillia - Ontario



MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

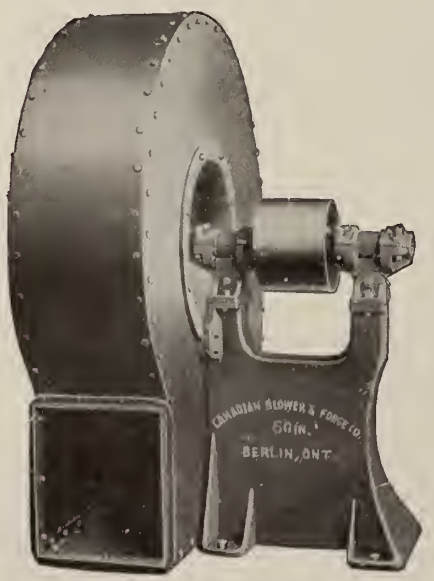
KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.



Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**



Canadian Planing Mill Exhauster

Keep your shop clean, remove your sawdust, shavings, or other loose material.

A clean shop with machines free from shavings, chips or sawdust makes for greater efficiency.

Let our engineering department help you plan your refuse exhaust system.

Write for Catalogue 400-13

Canadian Blower & Forge Co.

Kitchener, Ont.

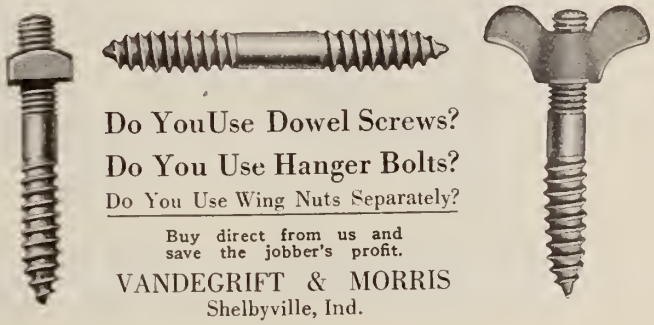
Montreal, Toronto, Winnipeg, Calgary, Vancouver, St. John

BLACK BROS.
CLAMPS

Where Black Bros. Clamps are known, there is no second choice. Know them.

Sold by Aikenhead Hardware Ltd., Toronto Vokes Hardware Co., Ltd Toronto J. L. Neilson & Co., Winnipeg and other leading dealers throughout Canada.

The Black Bros. Co. - Mendota, Ill., U.S.A



Do YouUse Dowel Screws?
Do You Use Hanger Bolts?
Do You Use Wing Nuts Separately?

Buy direct from us and save the jobber's profit.

VANDEGRIFT & MORRIS
Shelbyville, Ind.

CARVED MOULDINGS, CARVINGS, CARVED LEGS

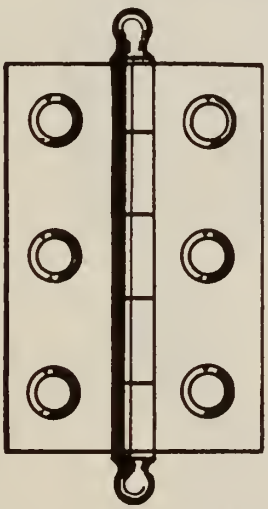
No. D-775 (Reduced One-Half)

No. D-763 (Reduced One-Half)

"KLISE' mouldings are carved, not pressed. Made in several hundred classic, period designs, in various sizes and shapes. Catalogue of legs and samples of mouldings sent on request. Send us your designs or samples of carvings for quotation.

KLISE MANUFACTURING COMPANY
Grand Rapids, Michigan

BUTTS



Both plain and ball tip in five sizes

1″ 1¼″ 1½″ 1¾″ 2″

In any desired finish

Larsen & Shaw Ltd.
Walkerton, Ont.

Manufacturers of
FURNITURE HARDWARE AND SPECIAL STAMPINGS

OAKEY'S
Glass Paper, Flint Sand Paper, Garnet Paper
IN SHEETS AND ROLLS FOR ALL PURPOSES

Rolls 50 yards long, 18 in., 20 in., 24 in., 30 in., 36 in., 40 in., 42 in. and 48 in., wide

SHEETS, DISCS, STRIPS AND BANDS can be made to Special Sizes to suit the requirements of Purchasers

JOHN OAKEY & SONS LTD.,
WELLINGTON EMERY AND BLACK LEAD MILLS
LONDON, S. E. 1.

Canadian Agents:

F. Manley, 290 McDermott Ave. W., Winnipeg, Man.
Sturgeons, Ltd., 64-66 Richmond St. E., Toronto.
Sankey & Manson, 839 Beatty Street, Vancouver, B.C.
John R. Anderson, 36-38 St. Dizier St., Montreal, P.Q.

P · A · X

Private Automatic Exchange

SIMPLE

The Automatic Telephone

Built to work automatically, surely, anytime, all the time. Easily understood and liked by foremen and superintendents.

Has no human troubles. Inexpensive, and once used, indispensable, because any and complete information can be quickly secured from any part of the plant by simply turning the dial to the number wanted.

"A Pair of Wires and a Dial," telling of P.A.X. in operation is yours for the asking. Write our nearest House.

Northern Electric Company
LIMITED

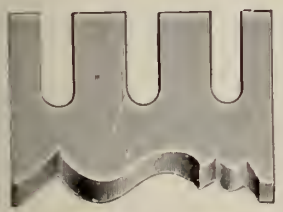
MONTREAL TORONTO WINDSOR CALGARY
HALIFAX HAMILTON WINNIPEG EDMONTON
QUEBEC LONDON REGINA VANCOUVER

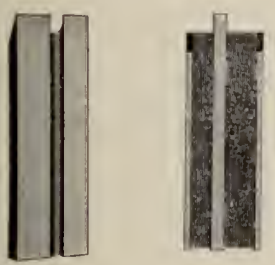
"Makers of the Nation's Telephones"

MANUFACTURING
Manual Telephones
Automatic Telephones
Wires & Cables
Fire Alarm Systems
Radio Sending and receiving Equipment

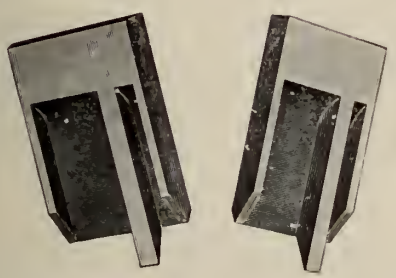
DISTRIBUTING
Construction Material
Illuminating Material
Power Apparatus
Household Appliances
Electrical Supplies
Power & Light Plants
Marine Fittings

SIMONDS
Machine Knives



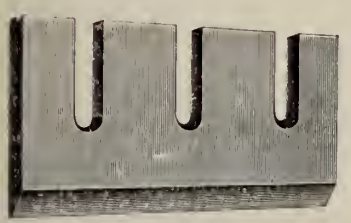


Woodworking shops, the machines of which are equipped with Simonds Knives are getting greater production and longer knife service. The high-grade steel of which Simonds Knives are made is tempered by a scientific method to hold its cutting edge longer and withstand wear.



Every kind of machine knife, as well as Saws which are required in the woodworking industry are produced in one of the five Simonds factories.

When you require knives send us your inquiries.



Simonds Canada Saw Co., Ltd.

MONTREAL, QUE.

ST. JOHN, N.B. VANCOUVER, B.C.

This engraving of a Link-Belt Chain has become familiar to Canadian industry through its use of Canadian business publications exclusively.

"I cannot speak too highly of the results we have obtained through consistent use of large space in business papers"

Julius Holl, Advertising Manager.
Canadian Link-Belt Company, Limited.

The Link-Belt Company is among the largest manufacturers of elevating, conveying and power transmission chains, coal and gravel washing machines, ash handling equipment, locomotive cranes and similar products. Their problem is to sell to many diversified industries and they use established business papers with extraordinary results.

What Link-Belt have done you can do also by placing your Sales Message in a publication that reaches your definite prospects in a business-like manner.

An advertisement in a business or technical newspaper reaches a specific trade or industry without circulation wastage among readers who have no particular interest in the goods you sell.

Some of the most successful advertising campaigns in Canada of recent years have used trade, business and technical periodicals, either exclusively or as the foundation for a more general appeal.

The advantages of being able to reach a known prospective buyer through a publication he uses in his business cannot be over-estimated.

Do You Know What Kitchener's Fire Chief Thinks of Gyproc?

Read this letter from H. Guerin, Fire Chief of Kitchener—

"I received the samples of Gypsum Board and Gyproc sent me by your company, please accept my thanks for same. I will do my best to have these materials used in building our City.

I was an interested spectator at your demonstration in Chatham, during the week of the Fire Chiefs' Convention. I must say I was very favorably impressed with your Gypsum Board, Gypsum Block and Gypsum Plasters. I might say from what I saw they are absolutely fireproof.

Your fire test of the above products was a real demonstration of the necessity of Fire Proof Buildings in every City, Town and Village in the Dominion of Canada, and I would not hesitate in recommending your products in all classes of buildings."

The above is typical of the opinion in which Gyproc—THE ONLY FIRE PROOF WALL BOARD ON THE MARKET—is held by fire chiefs, Underwriters and building experts.

Let us tell you how you can fireproof your plant with Gyproc.

THE ONTARIO GYPSUM COMPANY, LTD.

HEAD OFFICE: PARIS, ONT.

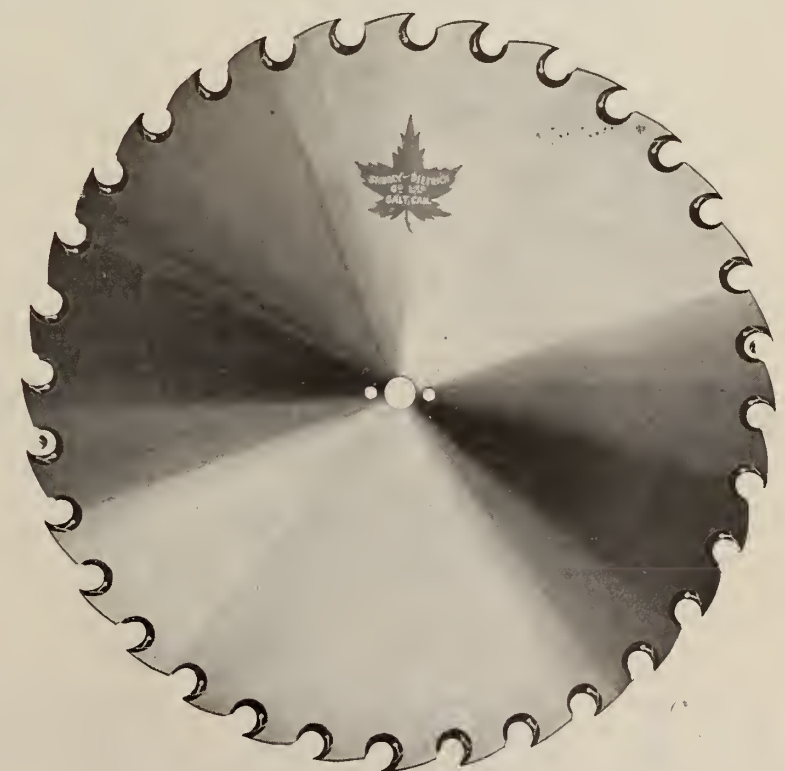
Branches: 374 Beaver Hall Sq., Montreal, 106 Don Esplanade, Toronto

Mills: Caledonia, Ont., and Lythmore, Ont.

MAPLE LEAF SAWS

There is a Maple Leaf Saw for every type of work – one that will reduce your cutting costs.

Maple Leaf Saws are made of extra refined Razor Steel tempered by our secret process.



Shurly - Dietrich

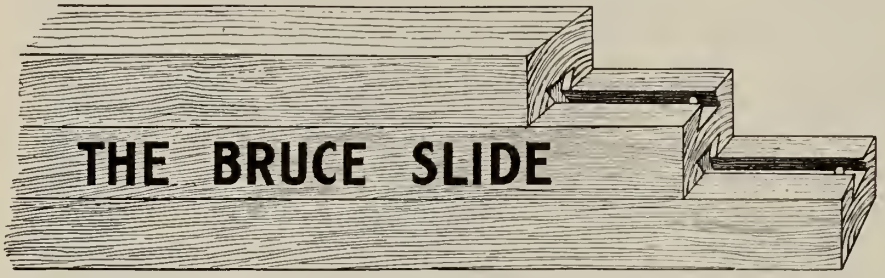
Limited

Galt - Canada

Store and repair branches at Vancouver

"The largest all-Canadian saw manufacturers."

TABLE SLIDES TABLE RIMS TABLE PINS



Makers of—

The "Bruce Slide"

BRUCE WOODWORKERS, Limited, Chesley, Ont.

97%

of Furniture and allied lines are sold on the recommendation of the Retail Merchant

In the eyes of the Consumer he is responsible

FIBRE CORD

(yards cheaper)

Any sizes, natural or brown.

Wire centre stakes cut to special lengths.

Hard round fibre for furniture of the better class.

Woven hard fibre.

Flat and split fibre reeds.

Close woven and open webbings.

NATIONAL PATENT REED SALES CO.
Drexel Building — Philadelphia, Pa.

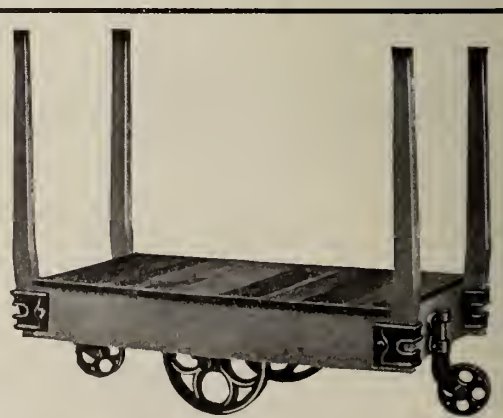
Sole Selling Agents:
NATIONAL PATENT REED COMPANY
Unionville - Conn.

FACTORY TRUCKS

Regular size 24 x 48.
Stakes 30 inches high.
Centre wheels 14½ in., diam., 2 in. face.
Steel stem castor wheel 6 1/4 in. dia., 1 1/4 in. face.
Weight 160 lbs.
Special sizes to order.

MANUFACTURED BY

P. E. SHANTZ, PRESTON, ONTARIO.



Factory Truck Style No. 26.

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

Memphis - Tenn.

We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK

3	cars	4/4"	Fas.
5	"	4/4"	No. 1 Common.
1	"	4/4"	No. 2 Common.

PLAIN WHITE OAK

2	cars	4/4"	Fas.
2	"	5/4"	No. 1 Com. & Btr.
3	"	4/4"	No. 1 Com. & Sel.
3	"	4/4"	No. 2 Common.

QUARTERED RED OAK

3	cars	4/4"	Fas.
6	"	4/4"	No. 1 Common.
2	"	4/4"	No. 2 Common.

PLAIN RED OAK

2	cars	4/4"	Fas.
3	"	5/4"	Fas.
3	"	6/4"	Fas.
2	"	8/4"	Fas.
8	"	4/4"	No. 1 Common.
2	"	5/4"	No. 1 Common.
2	"	6/4"	No. 1 Common.

QUARTERED RED GUM

2	cars	4/4"	Fas.
2	"	4/4"	Fas. Fig.
2	"	5/4"	Fas.
2	"	6/4"	Fas.
10	"	4/4"	No. 1 Common.
2	"	5/4"	No. 1 Common.
2	"	6/4"	No. 1 Common.

QUARTERED RED GUM S.N.D.

5	cars	5/4"	No. 1 Com. & Btr.
5	"	6/4"	No. 1 Com. & Btr.
10	"	8/4"	No. 1 Com. & Btr.

ASH

4	cars	10/4"	No 1 Com. & Btr.
2	"	12/4"	No. 1 Com. & Btr.
1	"	6/4"	No. 1 Com. & Btr.
2	"	4/4"	No. 1 Common.
2	"	4/4"	No. 2 Common.
2	"	5/4"	No. 1 Com. & Btr.

SAP GUM

8	cars	4/4"	Fas.
3	"	5/4"	Fas.
3	"	6/4"	Fas.
15	"	4/4"	No. 1 Common.
8	"	4/4"	No. 2 Common.
5	"	5/4"	No. 1 Common.
5	"	6/4"	No. 1 Common.

COTTONWOOD

2	cars	4/4"	Fas.
6	"	4/4"	No. 1 Common.
3	"	4/4"	No. 2 Common.

ELM

2	cars	4/4"	Log Run.
2	"	5/4"	Log Run.
1	"	8/4"	Log Run.
6	"	10/4"	Log Run.
6	"	12/4"	Log Run.

Taylor & Crate Hardwoods of All Kinds
A stock of 18,000,000 to 20,000,000 ft. of Hardwoods carried at all times at our big Buffalo yards.
RAIL AND CARGO SHIPMENTS Established 56 Years 2101 Elmwood Avenue

BUFFALO *"Buy and Sell Hardwood in this Market."*
FAMOUS LUMBER CENTER
Unequalled facilities for rapid dispatch, by Rail, Lake or Barge Canal, on all your requirements, large or small.
SUPPLYING THE HARDWOOD NEEDS OF THE NATION

Buffalo Hardwood Lumber Co. J. B. Wall, Pres't M. M. Wall, Treas. T. H. Wall, V-Pres't.
940 Seneca Street
We specialize in—WHITE ASH, OAK AND MAPLE

HUGH McLEAN LUMBER CO.
HARDWOODS OF ALL KINDS
Our Specialties—Quartered White Oak, Plain and Quartered Gum
940 Elk Street

ATLANTIC LUMBER COMPANY
HARDWOODS
Our Specialty—West Virginia and Pennsylvania Cherry
West Virginia Soft Red and White Oak. 1055 Seneca Street

BLAKESLEE, PERRIN & DARLING
A complete stock of seasoned Hardwoods
Including Ash, Basswood, Birch, Cherry, Chestnut, Cypress, Elm, Gum, Hickory, Maple, Plain and Quartered Oak, Poplar and Walnut.
1100 Seneca Street

T. SULLIVAN & COMPANY
NORTHERN
Gray Elm and Brown Ash
Niagara Street Corner Arthur

FRANK T. SULLIVAN
Specialties
Cherry, Walnut and Pacific Coast Woods
Main Office: 600 Ellicott Square. Yard: 2598 Delaware Ave.

1" to 4 No. 1" Common and 1s & 2s **HARD MAPLE**
Excellent widths and lengths.
Can kiln dry and surface.
G. Elias & Bro., Inc. Elk Street to the Buffalo River **Buffalo, N. Y.**

YEAGER LUMBER CO., INC.
Our Specialities
Oak Poplar Ash Maple
932 Elk Street

MILLER, STURM & MILLER
Hardwoods of All Kinds
1142 Seneca Street

STANDARD HARDWOOD LUMBER CO.
Hardwoods
Prompt Shipments—from Buffalo Yards or from Mill direct to you
8,000,000 feet Dry Stock on Hand. 1333 Clinton Street

Long-Bell Hardwoods are identified

Why

LOGS from our own virgin forests. Each log selected and cut for the purpose for which it is best adapted.

Class of timber producing excellent widths and lengths.

Manufactured in our own Hardwood Mills, equipped with modern band machinery.

Manufacture supervised by experienced hardwood men.

Thoroughness given every detail of manufacture.

Particular care given to uniformity of thickness—carefully edged, equalized and trimmed.

End-butted with mitre toothed saws.

Carefully sorted at chains.

Drying yard arranged to give thorough circulation to stocks in pile.

Every detail in sticking and drying carefully observed to insure best results.

Experienced inspectors grade lumber for shipment.

Double check inspection at cars in loading to insure uniform grades.

Same care exercised in loading cars as in manufacture.

Long-Bell Hardwoods are easily identified by the Long-Bell trade-mark on the end of the piece.

The Long-Bell Lumber Company
R. A. LONG BUILDING Lumbermen since 1875 KANSAS CITY, MO.

We Want to Sell

1 Car 4/4 1 & 2's Chestnut.

3 " 4/4 1 & 2's Plain Red Oak.

1 " each 5/4 & 6/4 10" and wider Red or White Oak Step Plank.

3 " each 4/4, 5/4 & 8/4 No. 1 Common & Selects Quratered White Oak.

2 " 4/4 1 & 2's Yellow Poplar Straight or Mixed Cars Band-Sawn, Soft Textured.

We operate our own Band Mill, Dry Kilns, Planers and Resaws.

Louisville Point Lumber Co., Inc.

1144 Fulton St. - Louisville, Ky.

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Ply Wood Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

"Largest producers of Hardwood Flooring in the British Empire"

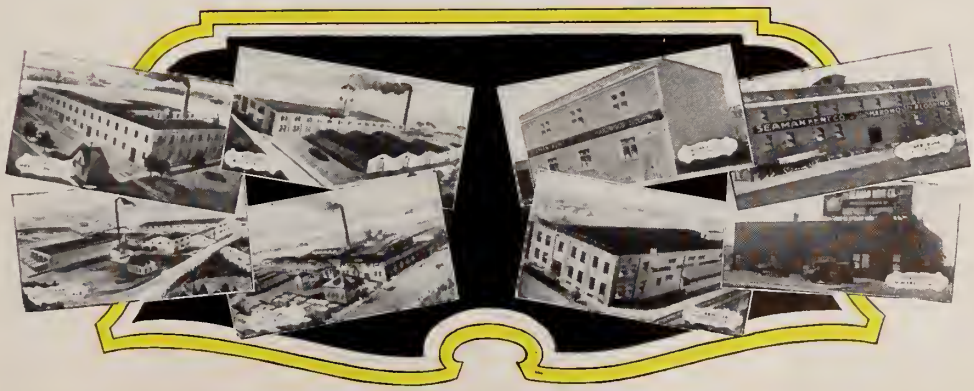
BEAVER FLOORING BRAND
TRADE MARK REGISTERED

Mr. Frank Kent

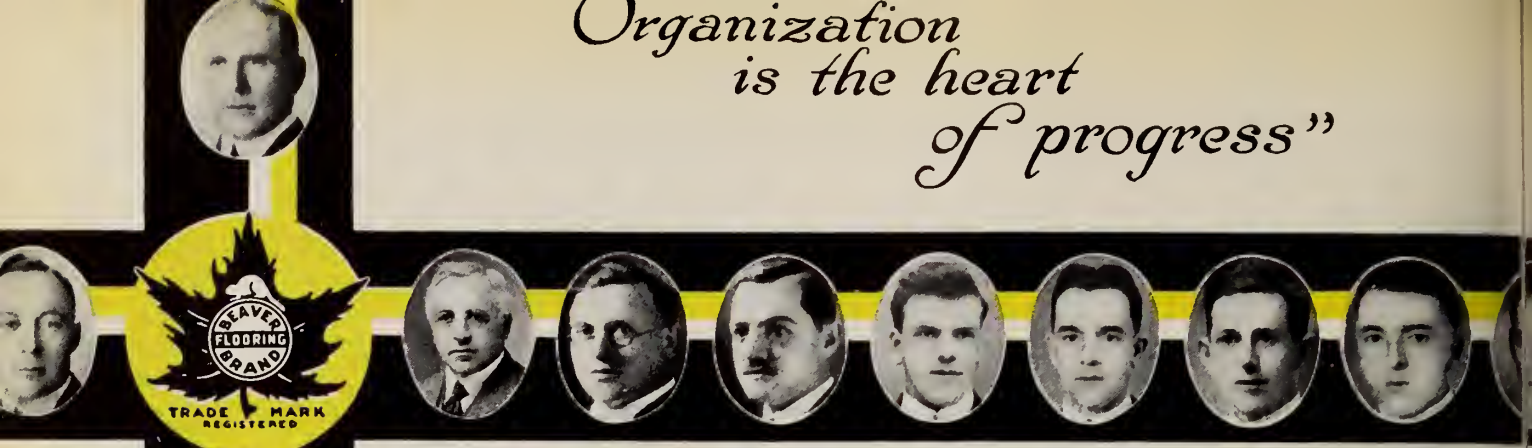
as Chief Executive of the Seaman-Kent Co., Limited—President and General Manager—controls the policy of the "Largest producers of Hardwood Flooring in the British Empire." Mr. Kent is a thorough believer in up-to-date methods, which accounts in full for the outstanding trade position held by—

SEAMAN-KENT HARDWOOD FLOORING

The manufacturing and distributive chain of factories and warehouses, continually at work supplying the nation-wide demand for Seaman-Kent Beaver Brand Hardwood Flooring, are shown below.



Organization is the heart of progress"



GEORGE T. BISSELL
Secy. Treas.

EDWARD H. STANNERS
Sales Manager.

ROBERT S. IRWIN
Supt. of Plants

THE extensive and thoroughly modern organization of the Seaman-Kent Co., Limited, is entirely responsible for the firm's premier position in the Hardwood Flooring World of the British Empire. From the timberlands of Canada to the beautiful finished product in Canadian Homes, the work of production and distribution is expertly handled. Four factories and the same number of warehouses, in the East and West, equipped in the most up-to-date manner, carry on the work of supplying the huge demand—ensuring careful attention to raw lumber (proper kiln drying and cooling), highest skill in manufacture, an exacting standard of grading and testing, and finally an unexcelled service of supply to dealer and private purchaser.

Nothing is overlooked that spells success to the consumer. Seaman-Kent Beaver Brand Hardwood Flooring truly lives up to the slogan "Best That's Made in Every Grade".

THE SEAMAN-KENT COMPANY, LIMITED

Largest Producers of Hardwood Flooring in the British Empire

WALLACE AVENUE
TORONTO

Factories: Meaford, West Lorne, Ste. Agathe, Midland.
Warehouses: Toronto, Montreal, Winnipeg, Edmonton.

STRONG GLUE
means
STRONG JOINTS

The most critical Woodworkers have used DUNN'S GLUES for nearly Half a Century.

Uniform Shipments Guaranteed

Let us solve your glue problems. Our Service Department is at your disposal and places you under no obligation whatsoever.

Free working samples upon request.

THOMAS W. DUNN CO.
of Canada Limited
P.O. Box 672 MONTREAL, P.Q.

THURN-MAXSON
Lumber Company
SOUTH BEND, IND.

Owners of Chas. O. Maus Lumber Co.

Everything in Hardwoods

We Specialize in—
OAK—White and Red—Plain and Quartered.
GUM—Red and Sap—Plain and Quartered.
CYPRESS—Genuine Gulf Red and Soft Yellow.

We Feature—
High Grades and Service Satisfaction Guaranteed

WRITE OR WIRE US FOR PRICES.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

Mills Coal Grove, Ohio
General Offices: 33 Rector St. New York City

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE, LA.

Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

BEDNA YOUNG'S
SOUTHERN
HARDWOODS

The quality and saleability of your furniture depends primarily upon your selection of hardwoods, for without good material the finest craftsmen are helpless. Play safe—always choose Bedna Young's hardwoods. Fine, figured, quartered oak a specialty.

BEDNA YOUNG LUMBER CO.

Jackson, Tennessee

From Old Kentucky

The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

Ash, Oak, Gum, Poplar, Hickory, Walnut, Chestnut, Beech, Maple, Elm, Sycamore, Cottonwood. Quotations promptly.

J. V. STIMSON & CO.
Owensboro - Kentucky
Bandmills: Owensboro; Campbellsville, Kentucky

Mercereau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern
HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS
Vice President and Manager of Lumber Dept.

Oak Furniture Display of Bare Bros., San Francisco. Awarded First Prize in Furniture Style Show. Manufactured by The Northern Furniture Company, Sheboygan, Wis.

Decrease Your Production Costs

Many furniture manufacturers require wider minimum widths than those specified in the present grading rules of hardwood lumber. In such instances, the use of narrow stock greatly increases the cost of production, due to the waste of materials, time and labor.

By using hardwood lumber manufactured by the W. M. Ritter Lumber Company, production costs can be materially decreased. Our hardwoods contain wider minimum widths than those found in the prevailing grades and through their use, the surplus of profit-consuming narrow stock is avoided.

The advantages offered in the wider minimum widths of our hardwoods, together with the fact that they are cut from Appalachian timber, which is easily seasoned and worked, makes them most economical for general cabinet construction.

Consult our representative or write us for particulars.

W. M. RITTER LUMBER COMPANY

General Offices COLUMBUS, OHIO

RITTER

APPALACHIAN OAK

From Tree To Consumer

From the time when the Timber-cutter, deep in the forest, cuts the first notch in the standing tree, till parts of that original tree, nearly six months later, are finally shipped as Lumber, Millwork, Box-shooks, etc., to the consumer, every process of this manufacturing operation is under the careful direction of the Chapman & Dewey management. This continuous supervision affords us the utmost economy and efficiency in production, and affords the consumer the assurance of obtaining material of a uniform High Quality.

Chapman & Dewey Lumber Co.

Manufacturers of Box-Shooks & Hardwood Lumber

MEMPHIS, TENNESSEE

Marked Tree, Ark. *Kansas City, Mo.*

You Couldn't Make a Good Pair of Shoes

Or Make Yourself a Good Hat

But— You DO Make Good Furniture

You make good furniture because you have made a good deal of it. Day in, day out, you make nothing else. For the same reason the shoemaker makes better shoes, the hatter good hats, the tailor good clothes.

And for the same reason this company cuts good walnut lumber and veneers—better walnut than most mills. We do not divide our attention between several different woods. Day in, day out, our workers cut walnut only.

Naturally they became more familiar with this beautiful wood, can cut it quicker, and get more beautiful effects, than can workers in mills sawing several different varieties.

Let us quote you on Iowa Walnut.

Des Moines Sawmill Co.

1024 Murphy Street,

Des Moines, Iowa

IOWA WALNUT

THIS MONTH

Buy Your Stock of

Basswood Panels

FROM

The Pembroke Plywood Company

PEMBROKE :: ONTARIO

BASSWOOD CROSSBANDING
BASSWOOD DRAWER BOTTOM STOCK
PANELS IN NATIVE WOODS

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

ORILLIA ONTARIO

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

HALL BROS. LIMITED
LUMBER & TIMBER
TORONTO, CANADA

"LUMBER AT FIRST COST"

CANADIAN AND SOUTHERN HARDWOODS

We specialize in Birch, Maple, Basswood and Elm in straight and mixed cars—selling at "first cost" prices. Quality of lumber and service are keep at the highest standard by every means in our power. Get our quotations before buying.

"to the planing-mill man"

PINE, SPRUCE AND HEMLOCK

graded to please the most exacting buyers and priced to allow liberal profits, now in stock for immediate shipment. We also handle B.C Fir in all thicknesses and grades. A trial order will convince you of the saleability of our products.

WRITE, WIRE OR PHONE

HALL BROS., LIMITED

MANUFACTURERS & WHOLESALERS

300 CROWN OFFICE BLDG., TORONTO, PHONE MAIN 2806

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

56 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar both plain and quarter sawed, Sound Wormy Chestnut, Cypress and Ash.

"Wire collect for prices or other information. Time is Money, delays pay no dividend."

La Tuque Turpentine

Made by an improved laboratory process from Canadian woods.

An excellent thinner for paste, colors, enamels, stains, paints and varnishes.

La Tuque Turpentine contains no free rosin.

The quality is there
The price is right

Write us for particulars

BROWN CORPORATION
56 St. Peter St., QUEBEC, P.Q.

WE CAN MAKE PROMPT DELIVERIES
on
Mahogany, Walnut, Quartered Oak and Gum Panels

We can serve you well on any of your requirements calling for the above woods. The quality of these panels will appeal to you, as well as the service we are able to give.

Send in your list for prices.

AMERICAN PLYWOOD CORPORATION
New London, Wisconsin, U.S.A.

"Better Use Birch"

The Saleability of Birch

Saleability is one quality in which all furniture manufacturers and woodworkers are vitally interested. When we say that furniture made of Birch is readily saleable, we pay a tribute to the other qualities possessed by this hardwood—beauty, utility and economy.

The recent trend toward solid furniture as opposed to veneers, and the great popularity of enamelled bedroom and boudoir suites has done much to increase the saleability of Birch.

Today it offers greater "per dollar" value than any other hardwood. Birch enables the manufacturer to produce the finest type of furniture at prices which guarantee their quick sale. Birch furniture compares in beauty and utility with the most costly suites of imported woods.

For Small Pieces and Gift Lines

Birch has always been used extensively in novelties and such lines as Smokers' Cabinets, Stands, etc. Its moderate price is a final argument which rarely fails to clinch the sale.

Anderson, Shreiner & Mawson

Colonial Bldg., 13 King St. West, Toronto

HARDWOOD LUMBER

Mills at South River Ontario

From Missouri?

WALNUT

We will not tire you with a long article on the merits of our Veneers.

All Ads read just about alike—stressing **course of supply, quality of product, complete stocks, prompt shipments, courtesy of service, etc.**

We, too, could say all that and then some, but we won't.

Talk's cheap. We've got the goods.

WALNUT

STUMPS

BACK CUT

HALF-ROUND

ROTARY

SLICED

WALNUT

Let Us Show You

GEO. W. HARTZELL, PIQUA, O.

WALNUT SPECIALISTS

THE BEST

IN

CANADIAN

HARDWOODS

PEDWELL Since 1883 Service to Hardwood Users

The PEDWELL HARDWOOD LUMBER CO.

Office and Yard: Foot of Spadina Ave. - - TORONTO

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

TENESSEE SCENTED CEDAR

1 in.—26,000
1¼ in.— 1,500

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	36,000	7,500	133,000	232,000
1¼ in.	18,000	.....	5,000	12,000
1½ in.	7,200	.....	7,000	104,000
2 in.	7,000	.....	22,000	63,000
2½ in.	4,500	.....	4,300	3,000
3 in.	21,700	.....	4,500	4,000
4 in.	3,000	.....	900	.....

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	.....	.....	.....	.....
¾ in.	72,000	7,000	15,900	3,000
1 in.	102,000	173,000	32,000	.....
1¼ in.	50,000	33,000	15,200	65,000
		7,600	.....	.....
1½ in.	33,000	35,000	.....	1,500
2 in.	15,000	57,000	7,000	12,000
2¼ in.	3,200	3,200	.....	.....
2½ in.	115,000	44,000	2,000	1,800
3 in.	13,000	23,000	900	600
3½ in.	4,500	3,000	.....	.....
4 in.	25,000	17,800	.....	.....

QUARTERED SAP GUM

	1 & 2	No. 1C	No. 2C
4/4	.....	1,800	.....
5/4	.....	9,000	.....
8/4	.....	18,000	13,800	300
10/4	.....	5,000	.....	.....
12/4	.....	300	.....	300

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,600	.....	3,000	.....
1 in.	119,000	2,000	231,000	57,000
1¼ in.	16,000	1,800	30,000	12,000
1½ in.	23,700	2,600	88,000	27,000
2 in.	3,000	.....	9,000	41,000
2½ in.	2,000	.....	.....	.....
3 in.	1,300	.....	.....	.....
4 in.	1,500	.....	300	.....

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,700	.....	5,700	500
1 in.	13,200	5,400	9,000	1,400
1¼ in.	5,900	.....	2,900	.....
1½ in.	400	.....	4,000	.....
2 in.	.....	.....	7,400	.....

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	49,000	171,000	.....	.....
⅝ in.	.....	74,000	21,600	2,000
1 in.	84,000	17,000	.....	50,000
1¼ in.	64,000	74,000	9,000	2,100
1½ in.	54,000	68,000	5,000	500
2 in.	59,000	112,000	26,000	5,000
2¼ in.	1,500	1,400	.....	.....
2½ in.	94,100	33,000	.....	.....
3 in.	12,800	20,000	7,000	12,000
4 in.	2,600	4,600	.....	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	.....	.....	.....
¾ in.	3,900	.....	6,300	3,000
⅝ in.	2,800	.....	700	800
1 in.	26,000	4,300	70,000	3,700
1¼ in.	7,000	27,000	48,000	4,800
1½ in.	7,000	500	2,500	.....
2 in.	3,500	.....	21,000	5,700
2½ in.	.....	.....	.....	.....
3 in.	.....	.....	.....	.....
4 in.	600	.....	200	.....

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	1,500	2,500	18,600	2,500
1¼ in.	14,500	4,000	2,000	9,000
1½ in.	.....	1,800	11,200	3,000
2 in.	8,100	12,400	300	4,700
3 in.	.....	.....	.....	300

POPLAR

	1 & 2 18" up	1 & 2	No. 1 Com.	Bright Saps
¾ in.	.....	.....	700	200
⅝ in.	1,500	37,000	54,100	4,900
1 in.	.....	81,000	92,900	700
1¼ in.	2,200	4,000	64,000	.....
1½ in.	5,300	8,000	42,000	24,000
2 in.	.....	8,300	14,000	12,800
2½ in.	.....	4,000	8,000	13,800
3 in.	.....	600	10,000	21,000
4 in.	.....	.....	4,500	9,200

Also Large Stocks of Ash, Basswood, Beech, Birch, Hard and Soft Maple.

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

OTIS
TRADE MARK

Tabasco
Honduras

ESTABLISHED 1867
INCORPORATED 1886

Laguna
Mexican

MAHOGANY

Rarely are such stores of precious wood to be found as may be seen in our yards. Across the seas from tropic lands it comes. From thick jungles where the light of day but dimly penetrates and where tangled native paths make difficult the bringing out of timber. Here the black man labors, risking life from jungle dangers, that supplies will not diminish and your orders may be filled.

Twelve million feet per year is the capacity of OTIS mills. An adequate supply is always on hand for prompt shipment. Get our prices.

Otis Manufacturing Company

Peters Avenue and The River

NEW ORLEANS, LA.

Chicago Office: Room 208, 128 N. Wells Street

CANADIAN FOREST PRODUCTS

5/8" Spruce Crating

Offer Special Price for Shipment Now. Let Us Quote You

TERRY-NICHOLSON-CATES
LIMITED
SUCCESSORS TO
Terry & Gordon, LIMITED

Montreal TORONTO Vancouver

Ontario Representatives for
The British Columbia Mills, Timber and Trading Co. Ltd., Vancouver, B.C.

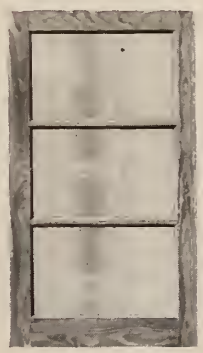
WHAT IS IT WORTH TO YOU?

TO BE able TO GET YOUR CUPBOARDS DOORS QUICKLY

SIZES IN STOCK Width		Height	NET PRICE
1-0	x	1-6	$1.25
1-0	x	2-0	1.25
1-0	x	4-6	1.60
1-1	x	4-6	1.65
1-1	x	5-0	1.85
1-2	x	4-6	1.75
1-2	x	5-0	2.00
1-4	x	1-8	1.25
1-4	x	2-0	1.25
1-4	x	2-6	1.25
1-4	x	3-0	1.35
1-4	x	3-6	1.55
1-6	x	2-0	1.25
1-6	x	2-6	1.30
1-6	x	3-0	1.45
1-6	x	3-6	1.80
1-6	x	4-0	1.90
1-8	x	2-0	1.25
1-8	x	2-6	1.40
1-8	x	3-0	1.65
1-8	x	3-6	1.85
1-8	x	4-0	2.10
2-0	x	2-0	1.35
2-0	x	2-6	1.70
2-0	x	3-0	1.90
2-0	x	3-6	2.20
2-0	x	4-0	2.50
2-0	x	4-6	2.85
2-0	x	5-0	3.15

No. 20

Sizes in Stock and Prices Shown at Left



No. 23
No Glass Included

SIZES IN STOCK			PRICE
1-4	x	3-0	$1.30
1-6	x	3-0	1.45
1-8	x	3-0	1.60
1-10	x	3-0	1.75
2-0	x	3-0	1.85

No. 21
Medicine Cabinet Doors
Beads Fitted
Sizes Below

SIZES IN STOCK			PRICE
1-0	x	1-8	$1.25
1-0	x	2-0	1.25
1-1½	x	2-0	1.25
1-4	x	1-8	1.25
1-6	x	2-0	1.25
1-8	x	2-0	1.25

All 7/8" Thick Clear Pine—15,000 Other Doors in Stock

PANNILL DOOR COMPANY LTD., 131 Front St. East, Toronto

Main 623

We are Now in a Position to Make 48 Hour Shipment

MAPLE

4/4	No. 1 Common & Better	150,000′
8/4	" " "	100,000
10/4	" " "	150,000
12/4	" " "	150,000
14/4	" " "	20,000
16/4	" " "	40,000
4/4 x 4"	Clear face and better Strips	40,000

BIRCH

4/4	No. 1 Common.	70,000
4/4	No. 2 Common	100,000

All at our Bay City Mills — Can give Service and Quality

ASK FOR QUOTATIONS

KNEELAND-BIGELOW COMPANY

BAY CITY - - MICHIGAN

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

Oak Timbers and Planking

THE MOWBRAY & ROBINSON LUMBER CO.

Office: CINCINNATI, OHIO

Canadian Representative:
A. K. Johnson, Bank of Hamilton Bldg. Toronto, Ont.

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES – that you can afford to pay
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

STARK

The LAST WORD in QUALITY & SERVICE

K

BRAND

HARDWOODS
Oak, Ash, Gum, Poplar, Maple, Elm, Cottonwood, Sycamore.

CYPRESS
Lath, Lumber, Dimension.

VENEERS
Door Panel.
Piano Rim.
Cypress Battery Stock.

OAK FLOORING
"Chickasaw Brand"

Here is Genuine Service for Discriminating Buyers

Our unusually heavy output, our wide selections and our kiln-drying capacity of 1,000,000 feet a month, combined with our constant desire to please, insure prompt filling of all your needs in

HARDWOODS - VENEERS
CYPRESS - OAK FLOORING

Our timber is as fine as grows in the South and we use the utmost care in manufacture. Futhermore, during present transportation difficulties, our expert traffic service prevents transportation delays.

James E. Stark & Company

INCORPORATED

MANUFACTURERS MEMPHIS, TENNESSEE

Chicago Office: 25 N. Dearborn St.

Snapped as it was falling

Southern Hardwoods
and
Genuine Louisiana Red Cypress

Plain Red Gum — Plain Sap Gum — Plain Red Oak — Plain White Oak
Quartered Red Gum — Quartered Sap Gum — Quartered Red Oak — Quartered White Oak

GLIMPSE NUMBER FIVE INTO THE HARDWOOD OPERATIONS OF

E. SONDHEIMER CO.

Band Mills:
SONDHEIMER, TALLULAH
ALEXANDRIA, LA.

(Cable Address—Sonderco-Memphis)
MANUFACTURERS

Office and Distributing Yard:
MEMPHIS, TENN.
Chelsea and McLean Avenues

A Permanent Lumber Service

AFTER several years of inactivity we are now cutting on our modern fully equipped mills at Manistique and Little Lake, Upper Michigan. The timber behind these mills was purchased many years ago by the Stack interests from the then "unlimited" supply. Its quality, particularly the maple and birch, is the envy of northern mill men among whom this tract is famous.

This timber will run the mills to full capacity for fifteen to twenty years. The 40,000,000 feet annual cut will run:

15,000,000 ft. maple annually
6,000,000 ft. birch annually
2,500,000 ft. beech annually
2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually
the balace in Spruce and Tamarack.

Our exceptional service, grades, and manufacture will be maintained. "Low freight rate shipments by water to Toronto, Montreal, Owen Sound, Port Arthur, and other Great Lakes and St. Lawrence River Ports. Conveniently located also for rail shipments to inland points by the C.P.R. or Soo line."

We will be pleased to hear from old friends and from new ones who can understand and appreciate what permanent connection with such a source of supply would mean.

STACK LUMBER CO.
ESCANABA MICHIGAN

Southern Hardwoods

MISSISSIPPI DELTA GUM
The Best That Grows

OUR mills are producing some beautiful stock at the present time, and we can assure prompt delivery in any quantity.

Plain and Quartered Red and Sap Gum, Plain and Quartered White Oak, Plain Red Oak, Cottonwood, Cypress, Ash, Elm.

Write for prices and full particulars

MISSISSIPPI VALLEY HARDWOOD CO., INC.

Bandmills: Memphis, Tenn., Clarksdale, Miss.
Sales Office: Memphis, Tenn.
MISSISSIPPI DELTA GUM The Best That Grows

BANNING

For

Hardwoods

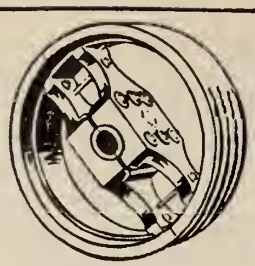
Oak
Ash
Walnut
Mahogany
Poplar
Chestnut
Gum

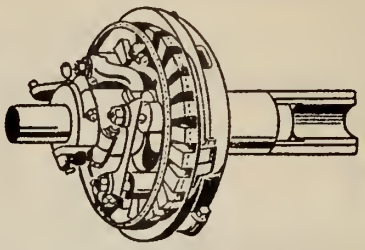
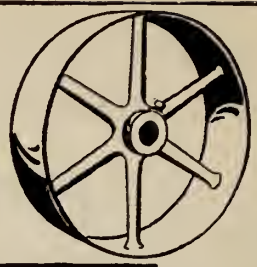
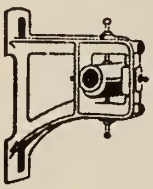
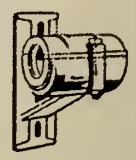
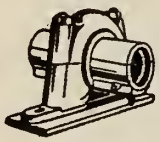
Our Prices and Values are Right

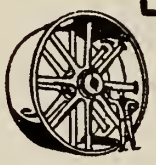
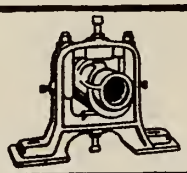
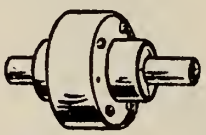
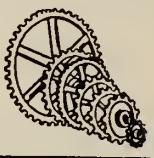
Give us a trial on your next order.

We want you to see our stock.

Canadian Representative
A. E. KLIPPERT
11 Laxton Ave.
Toronto, Ontario



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Power Transmission Machinery

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- Gearing
- Steel Split Pulleys
- Iron Centre Wood Rim Pulleys
- Wood Split Pulleys
- Counter Shafts
- Hangers
- Pillow Blocks
- Floor Stands
- Mule Stands
- Belt Tighteners
- Friction Clutches
- Rope Dressing
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- Belt Clamps
- Boots
- Belt Conveyors
- Take Ups
- Grain Shovels
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- Trippers, etc., etc.

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TORONTO MONTREAL

The Rich Soil of the Yazoo Valley Produces America's Finest Red Gum

15,000′	4/4″ FAS Plain Red Oak.
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45,000′	4/4″ No. 1 Com-Sel Plain White Oak.
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70,000′	4/4″ No. 1 Com-Sel Quartered Red Gum.
28,000′	6/4″ FAS Quartered Red Gum.
60,000′	8/4″ FAS Quartered Red Gum.
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We operate two band mills in the Mississippi Delta whose output is confined to hardwoods grown in the Yazoo Valley—and we make a specialty of band sawed Red Gum. If you have never tried it, make up a trial order from the list given below. This is beautiful stock and we know you will be delighted when you receive it.

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Band Mill at Cary, Miss. **Band Mill at Louise, Miss.**

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and
Furniture Manufacturer

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Accurate Costs are the Most Important Need of the Woodworking Industry

That costs and methods for their accurate determination are matters with which woodworkers are vitally concerned, is shown by the answers to a questionnaire recently sent out by the "Canadian Woodworker" to representative members of the industry. In reply to the question, "Can you suggest any class of article that might make the 'Canadian Woodworker' more helpful to its readers?" many firms have referred to the importance in their own minds of the cost problem, and have suggested further articles in the paper dealing with various aspects of the question. For example, one reply, which is just typical, stated, "We suggest further practical discussions on mill work costs and an effort to secure co-operation, looking to a uniform application of a cost system."

For such interest in the matter of costs the "Canadian woodworker" is grateful, because it indicates that the millwork operators are becoming thoroughly alive to one of the serious impediments of their business—the lack of accurate, scientifically determined cost data. Yet such lack of cost data is very prevalent. Indeed, hundreds of firms are operating today in a haphazard manner without any knowledge of their costs and consequently without any definite idea of whether they are making adequate profits. Fortunately, the number of such firms is gradually decreasing as they come to realize how uneconomical and inefficient it is to conduct business without some idea of the costs involved.

In an attempt to get the executive of woodworking plants to realize the all-important bearing of cost-knowledge on their business the "Canadian Woodworker" has pretty consistently striven to give to its readers, through editorials, articles and practical data, the fundamental principles of cost finding and the methods of applying them in actual practice. Thus for a year, this paper ran monthly cost studies in which a number of firms independently worked out their costs of typical pieces of millwork. By drawing attention to the wide discrepancies that were nearly always apparent, an attempt was made to make our woodworking readers see the absolute necessity of seriously studying this question so that they would have such a true idea of their manufacturing operations as would enable them to operate more economically and more profitably. The general approval that has been accorded these articles and the indication by so many of our readers that further articles are desired is, therefore, gratifying in that it suggests a better appreciation on the part of woodworkers of the value of cost data. One sash and door manufacturer writes for example, "The articles on costs as published by you for some time past are the most needed and the manufacturing business would be better for everybody if your suggestions were followed."

For the best results from the adoption of a cost system it is desirable that, as was expressed above, an effort be made to obtain co-operation with a view to securing uniformity in the manner of cost finding. The need of this was well indicated by the discrepancies that were recorded in the series of articles referred to above. These were largely due to the absence of any uniform manner of determining costs and of any similarity of views concerning the factors involved. To overcome this demands more effective co-operation of the millwork industry than has been evident in the past—an achievement that will bring effective results in more directions than one.

There is still need for a strenuous campaign before all the woodwork plants will be converted to an appreciation of the value of cost finding systems. For that reason the "Canadian Woodworker" will continue to give its readers that knowledge which it believes they should have concerning costs. The importance of the subject forbids any neglect of it and, consequently, this journal will devote such space to it as is justified by the close bearing it has on the status of the industry. In this connection, constructive suggestions from our readers will be welcomed and appreciated because we desire to know how best to make our appeal and how most effectively to spread the gospel of accurate costs to those members of the industry who have not yet come to the knowledge of their true import. The practical experiences of our readers in this direction would undoubtedly prove beneficial. Therefore—for the good of the cause—let the editor have your ideas on the subject.

Making Woodworking Appeal to Young Men

Now that the Planing Mills and Woodworking Plants are Learning the Secret of Successful Operation, There are More Opportunities and Greater Incentives for Boys to Enter the Business

By WM. WARREN*

In the March issue of the "Canadian Woodworker" on page 66 an article appeared under the heading "How Can We Interest Young Men In The Planing Mill Business?" Frankly, I am filled with alarm as I look through our plants and see such a heavy predominance of middle aged or old men holding down bench jobs and also operating machines. Sometimes we wonder why more men have not been induced to make a study of the mill industry, and yet when we calmly review the situation the cause for this state of affairs may quickly be found. I think it is because planing mills and woodworking factories have never been operated along scientific lines.

It is only within the last five or ten years that woodworking plants have been operated in conjunction with a cost accounting system, and even during this period only a small percentage of them have recognized the tremendous advantages to be derived from cost keeping. Mill owners used to drift into the business in a haphazard kind of way, and then success or failure depended upon their ability to guess values, do a great amount of the work themselves, and compel their employees to give $1.00 worth of value for 50 cents.

Mr. Wm. Warren

No Incentive in the Past for Young Men

Ten or fifteen years ago it was very hard to single out a woodworking plant that could be considered successful in every sense of the term. If an owner secured for himself a decent livelihood, and managed to keep out of the bankruptcy court, then it was generally conceded that he had not done too badly. The rising generation was quick to observe this, and consequently could not see in our time-honored industry anything very brilliant, and in the majority of cases they drifted into something else that looked interesting and profitable. Then the war period came along, when big inducements were offered in other lines, many of them quite novel. To-day, however, there seems to be a tendency on the part of our youth to drift back into the woodworking industry, and why? Many of the novel lines that our boys have drifted into seem to have lost their attraction, possibly because there has been a general stampede towards some other industries, and they have not proved as lucreative as was first anticipated. And there now seems to be a desire to become initiated into the mysteries of the woodworking business.

We have made wonderful strides during the past five or ten years. In line with other business we are operating more scientifically, and cost accounting is the one thing above all others that will raise the tone of our business and bring in young men anxious to learn it. Even to-day ten applicants interview me for positions in the office to one making application for work in the yard or mill. They all with one accord seem to formulate the opinion that the place to learn the business is in the office, and not around the plant. It has been my practice for many years to single out bright intelligent fellows from the common help, and place them in positions, either as shippers, machine helpers, or bench helpers. Some of them tire of their new jobs, and step back; others after a brief experience flatter themselves that they are fully fledged mechanics and migrate elsewhere, whilst a few of them stay to complete their education and become promoted.

The Value of Shop Training

It is well known that our foremen and superintendents are drafted from the operators in and around the plant, and even if a man is desirous of procuring a position on the road or in the office there is no better training ground than the plant. A man backed with this experience is not nearly as likely to be cornered when coming in contact with customers as one who lacks this essential ground work. I would like to see the woodworking industry as a body take up the question of apprenticeship, and bind an apprentice under contract for a period of, say, three years, and at the same time point out to each and every aspirant that he is taking on an honorable profession which can only be bounded by his own limitations. At the same time apprentices should have received a reasonable education and when commencing their trade should study such things as architecture, mensuration, quantity surveying, and cost accounting. Those willing to do this will find that positions will be opened for them as draftsmen, estimators, superintendents, salesmen, and even managers. Some, of course, will not be able to qualify for these positions, but if they diligently apply themselves to the trade they will at least become good

*Manager, The Myers-Warren Lumber Co. Ltd., Toronto.

mechanics, and be assured of reasonably steady employment.

The moral side of these beginners should not be forgotten either, and in making selections, good clean-minded boys should be selected. They should be taught that the most pernicious thing in business is waste of both time and material. Care should be taken that they are brought up in an atmosphere of optimism and buoyancy, and under no consideration should they be allowed to come in contact with any chronic kickers. If possible, amongst the other studies the apprentice should undertake, if he can still handle another study, is a business course which may be taken with good advantage.

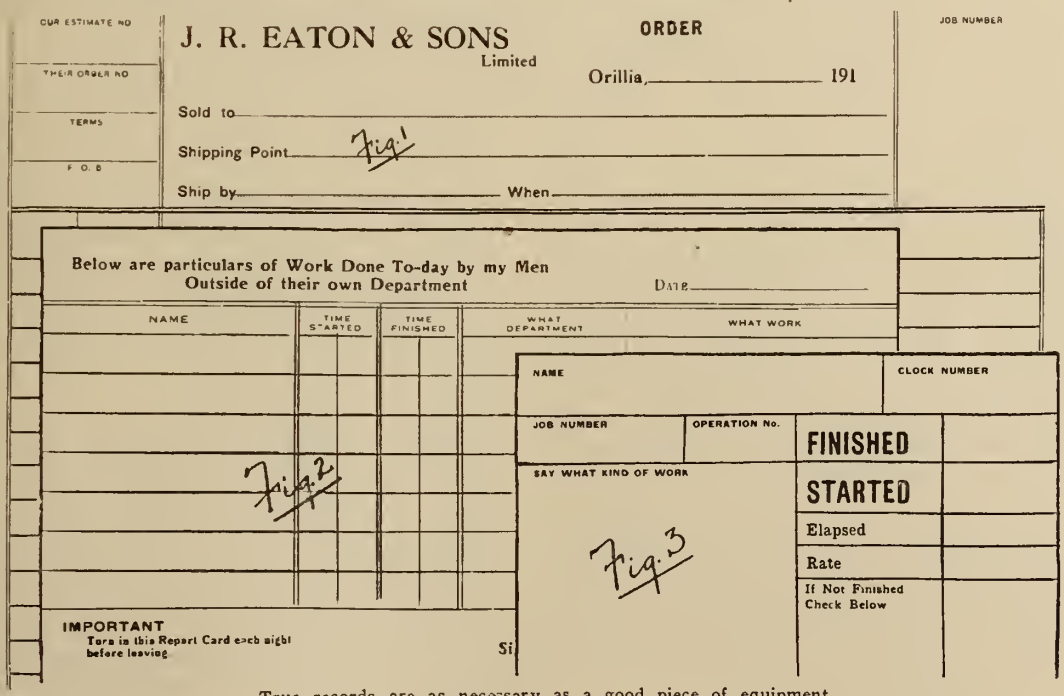
Several years ago I introduced monthly meetings composed of our entire office staff, foremen, and other key men, and to these we quite frequently invited our beginners and quite frankly discussed our various problems. We found that these meetings were very educational and brought out a lot of creative thinking. They also assisted in surmounting a lot of difficulties and bringing out the very closest of co-operation. In this way we have the recruiting ground where a man can be found for almost any position without the introduction of strangers.

J. R. Eaton & Sons Are Strong on Costs

This Large Orillia, Ont., Woodworking Establishment Has a Thoroughly Efficient System for Keeping Records and Determining Manufacturing Costs

At the recent convention of the Ontario Retail Lumber Dealers Association at Windsor, one of the most widely discussed topics was cost accounting. A few ideas on the subject were given by the members who appreciated the value of correct cost keeping, but the majority came to the convention with an open mind on the subject. No particular cost system was discussed but a few men complained that systems they had installed were not suited to the size of their business. Of course, there are a number of ways of keeping costs, which are claimed by the users to be the best. It would seem rather peculiar then, if these well-known systems could not be adapted to size would not require and finally gave it up in disgust.

A representative of the "Canadian Woodworker" had the pleasure of visiting the plant of J. R. Eaton & Sons, Limited, of Orillia, Ont., recently, and was kindly given access to the cost system employed by that firm. The company employs about 150 men and are members of the Millwork Cost Bureau, Chicago. It is not the purpose of this article to describe the plant and equipment itself, but rather to give some idea of how the cost of the work going through the factory is tabulated. However, those who are familiar with the industry will be able to gauge the approxi-



True records are as necessary as a good piece of equipment

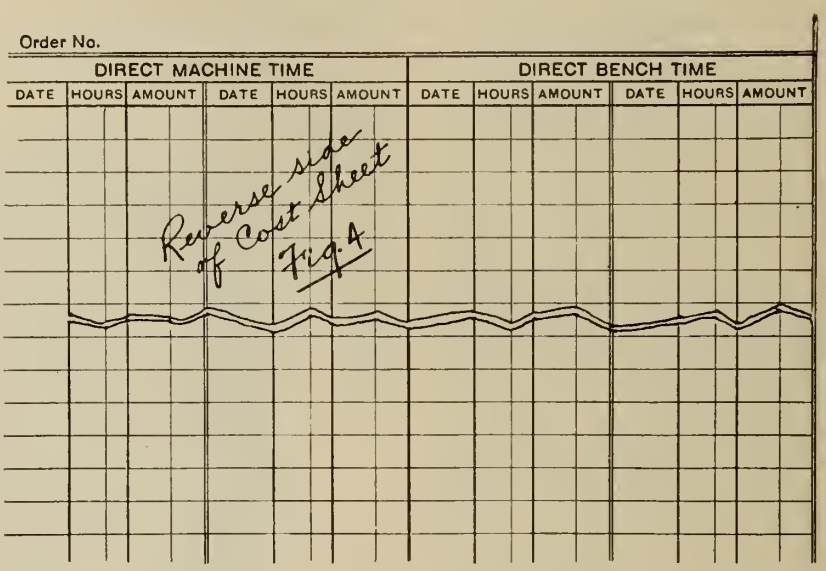
a business of any size. Many of those who have complained about widely known cost systems not suiting their needs, have very likely tried to install them themselves without finding out what was necessary and not necessary for a business of their size. Probably they got all tangled up trying to use everything in the system that a business of twice the mate capacity of the plant when it is said that three moulders are in use continually on detail work.

To obtain a logical view of the system adopted in this plant we will follow an imaginary order through the plant, keeping our eyes open to see how tab is kept on the cost of the work.

First of all, the order when received, is taken

down on the general order form in duplicate. This particular order may consist of several different items of millwork, but they are all put down together on the general order form. The original is kept on file in the office and the copy sent on to the Billing and Detailing Departments.

The department first bills out in triplicate a factory order for each different job on factory forms (See Fig. 1). The original is retained by the office, the first or blue copy is given to the Detailing Department and the second, or yellow copy, is eventually placed in the hands of the shipper. When the Detailing Department receives the blue copies, which are really the work orders, they proceed to make the necessary working drawings for each job. When this is done, the required materials are visualized and requisitioned. These requisition forms although special, are plain with no printing on them. They are about 8 inches x 4½ inches and are filled out in triplicate. The required materials for each job are written on a separate slip. The original is sent to the office. The first copy of the material slip is also blue, but smaller than the blue factory working orders. The second copy is made of white cardboard and is given to the lumber store shed foreman. The material requisitions for the original general order, it will be understood, may now be in the form of several cardboard slips, depending on the number of different jobs on the original order. The cardboard material slips are returned with the material to the factory.



The details are tabulated daily

All the preparatory work has now been completed on the order, the material has been previously kiln dried, of course, and is at the factory door; the working orders and material slips are in the hands of the foreman. Before starting the machinery and bench work of the different jobs on the imaginary order, we shall consider our overhead or burden.

Application of Burden

There are many ways of applying overhead. Some add a percentage on lumber; others on labor, while still others on labor, plus material. Percentage is not the most equitable or the most accurate way to apply overhead. A machine may be operated by a 60-cent man one day and a 40-cent man the next. The actual overhead is the same in each case but the burden charge will vary if it is applied as a percentage on the per man-hour rate. It costs practically as much to handle 1,000 feet of oak as the same quantity of hemlock, yet if the overhead is applied as a percentage of value, the charge will be nearly three times as much in one case as in the other. A better way is to divide the overhead and apply it as a fixed charge on a definite unit. The above method as outlined by the Millwork Cost Bureau is to divide all cost or expense that is neither direct labor or direct material into five divisions:

1. Yard Burden, which embraces all cost of handling and carrying lumber from the moment of its receipt until entry to the factory, or if not worked until taken over by the delivery crew. The burden is expressed as a flat rate (dollars and cents) per thousand board feet.

2. Kiln Burden, which is composed of all cost incident in drying in the kilns. It is expressed as a flat rate in dollars and cents per thousand board feet dried.

3. Machine Burden is all cost—not counting direct workmen's wage—of operating the machine equipment and housing it and workmen. It is expressed as a fiat rate of dollars and cents per direct man-hour.

4. Bench Burden is all cost—exclusive of direct workmen's wages—of operating the bench department and housing the equipment and workmen. It also is expressed as a flat rate per direct man-hour. Finishing is considered bench work unless in sufficient volume to warrant a special division for burden.

5. Commercial Burden is all cost occurring after the manufacturing processes have been completed; warehousing, selling, general office expense, delivery (not freight) and administrative expenses. It is expressed as a percentage of the factory cost, which is direct material, plus yard and kiln burdens, plus labor, plus labor burdens.

From the foregoing it will be seen that there are three definite units for applying burden: unit per M feet, unit per man-hour and unit per dollar on factory costs.

Going back to the factory where the material

for our order is being distributed to the different departments, the machine operators take a card (See Figure3) and punch it at a nearby clock when they start on the order. When they finish it is punched again and the exact number or fractions of hours put on the job can be readily calculated. The same applies to the benchmen. Their different times on the order is tabulated also. There cards are collected at the end of each day and taken to the cost accounting department. We shall suppose now that our order is finished and so shall go into the accounting depart-

COST SHEET Order No.

Name Date

DESCRIPTION—

COST SUMMARY		UNIT PRICE	EXTENSION	TOTAL
MATERIAL—				
	(a)			
	(b)			
	(c)			
	(d)			
	(e)			
	(f)			
	(g)			
	(h)			
	(i)			
	(j)			
MACHINE - LABOR	HOURS			
BURDEN	" (k)			
BENCH - LABOR	HOURS			
BURDEN	" (m)			
LABOR	HOURS			
BURDEN	" (o)			
REMARKS:-	FACTORY COST			
	COMMERCIAL BURDEN %			
	TOTAL COST- NO FREIGHT			
	SALE PRICE- NO FREIGHT			
	PROFIT % of T. Cost			
	LOSS % " " "			
	LIST PRICE			
	COST DISCOUNT			

Fig 5

The sheet that tells the story of the order

ment and see what becomes of the time cards. A special card (See Figure 2) is kept and handed in by the department foreman if so necessary, of work done by men outside their own department.

In the accounting department they have sorted out the cards on our order and are tabulating on the reverse side of the cost sheet (See Figure 4) the date, the number of hours and the cost of both the direct time of machine and bench work. After this is completed, the totals are taken to the cost summary (See Figure 5). The cost sheet has space for customer's name, order number, date and description of order. The machine burden, as previously explained, is obtained by multiplying the number of hours by a flat burden rate, which is developed through analysis of past cost records, preferably a twelve months' period. The additional labor and burden section at the bottom of the cost summary is for an additional production department if needed. If our order were tabulated on the cost sheet, we would add the totals of direct material cost, and the machine and labor costs and burdens and the results would be the factory cost. The commercial burden is then added, a percentage of the factory cost.

The cost sheet is purely a factory cost record and there is no accommodation on it for the yard or kiln burdens and waste percentages. These burdens, of course, are included in the form of a flat rate (dollars and cents) per thousand of the purchased delivery price of the lumber. The cost of the number of feet estimated for the specific order is then calculated on the unit cost per thousand at the factory door.

A feature of the accounting system in the J. R. Eaton & Sons' plant is the large payroll book which accommodates all the names of the employees. At the top of each page the different department names head the columns, and from the daily time cards each man's time is tabulated for that day under the department in which he was working. With this system it can be readily ascertained, within a few hours' notice to the accounting department, if need be, how many hours were spent in each department in the factory for any week, month or year, and what each department cost. This information is very valuable for comparing each month's figures in the various departments.

Hardwood Manufacturers' Institute Meet on May 10-11

The Hardwood Manufacturers' Institute announces that its first annual meeting will take place on May 10th and 11th at the Blackstone Hotel, Chicago. Elaborate plans are under way to make this convention an outstanding success and prominent speakers are scheduled to give addresses. The speakers will be representative of outstanding hardwood consuming interests, figures of prominence in politics, government and general business, and authorities on general and technical phases of the lumber industry.

The programme will be arranged so as to be in keeping with the progress that the Institute has made since its inception in June of last year. At that time it embraced 70 members but at the present time the membership is stated to comprise 300 hardwood producers, representing upwards of one-third of the hardwood lumber manufacturers in the United States. With the increase in the membership of the Institute its activities have also grown, so that, for example, the Institute lumber inspection force now numbers 12 men instead of the original 3.

The Institute has extended an invitation to all hardwood manufacturers to attend the convention whether they are members or not.

Trade Enquiries

A Rio de Janeiro firm wish to hear from Canadian manufacturers of piano actions and parts. Further information in possession of the editor. Refer to inquiry 1393.

A Manchester firm are open to purchase the following, or would act as agents for: clothes pegs, chair seats, wood handles, etc. Refer to inquiry 1408.

"Watch Canada," Says Babson, "Her Condition is Exceptionally Favorable"

Canada Sound, Babson Avers

Roger W. Babson has returned from his annual inspection trip. In reviewing the trip in general, Babson stated that if anything, business is becoming too rapidly active in the United States.

"Everywhere people are talking prosperity, building is booming; prices are again advancing and wages are rising," says the statistician. "A little of this is a good thing but too much of it all at once is dangerous. When a patient recovers too rapidly, a relapse may occur. The business men of the United States need to remember the warning of that old capitalist and philosophor—King Solomon—who cautioned the business men of Jerusalem that 'pride goeth before destruction and a haughty spirit before a fall.' Personally, I much prefer the more gradual and deliberate manner by which Canada is passing through her readjustment. We have much to learn from our northern neighbor. Today conditions are better in the States; but unless we take care, business will be better in Canada in 1924 than it will be here.

Improvement in Canada is Imminent

"I spent some two weeks of my trip studying Canadian conditions," continued Babson, "and was very much pleased with what I found. Various factors suggest that the Dominion stands in about the same position in the economic cycle occupied by the United States six or eight months ago. If this is so, we must look for Canadian business to improve rapidly during 1923. The farming situation is better and more favorable conditions prevail in trapping and trading centers of the north woods owing to the state of the fur market and the plentitude of furred animals. British Columbia is in a more prosperous position than the prairies. Its farmers did fairly well last year and the fruit-growing sections had very profitable yields. Lumber demand is expected to develop to quite sizeable proportions. Even in the mining towns I look for a fair improvement. In British Columbia business during the spring months should be good.

"Canadian sales efforts during the next few months should be concentrated on the eastern provinces. The industrial communities of Ontario and Quebec look relatively the best and even in the agricultural sections conditions are more favorable than on the prairies. Mixed farming helped to lighten the load of the eastern farmer. Industrial activity in Canada is estimated to be in the vicinity of 70 per cent of capacity. Unemployment and short time is still prevalent in some lines. Gold mining is an outstanding exception. This line is fairly busy and is resulting in considerable prosperity in such centers as Porcupine and Kirkland Lake, Ontario.

"Industries manufacturing goods for human consumption or covering are perhaps most active and have the most encouraging outlook. The best customers will be found in the cities. I have in mind all of the manufacturing centers of southern Ontario and Quebec, but especially these producing pulp, boots and shoes, textiles, clothing and food products. In the maritime provinces, a firm foundation is being built up for business improvement. Basic industries are now dull, but I believe that warmer weather will bring decidedly better markets for lumber, fish and other local products. By summer, New Brunswick and Nova Scotia should look nearly as attractive to sales representatives as southern Ontario and Quebec.

U.S. Must Turn to Canada

"A more hopeful feeling is developing, however, in the prairie and other agricultural regions. Better prices for farm products are helping the Canadians as well as the farmers in the States. As the Canadian farmer was slower in feeling the good effect of this increase in prices of farm products, so, he will enjoy it longer. It seems to be a fundamental principle of economics that the Dominion lags about a year behind the States, both as to action and reaction—decline and recovery. Hence, I say that while today conditions are better in the States, they may be better in Canada next year. Business conditions are much like a storm—they travel across the country in waves. Each section gets the storm, but all do not get it at the same time.

"The United States should be better neighbors to Canada. Some day the States must turn to her for natural resources. When our timber is gone, when our water power is all developed, when the price of land here makes the raising of cattle prohibitive, we must turn to Canada.

"The Babson chart continues to register the slight inflation to which I have already referred. Today it still stands at 5 per cent above normal. With the readjustment only 60 per cent completed, this is not a healthy sign. It is dangerous to raise prices or wages at the present time. Let us have prosperity, but let us not have inflation. Things that have recently occurred in the stock market, the spirit of the bootleggers, and the general desire of almost everyone to get something for nothing are not healthy signs here in the States. We need more character and less speculation at the moment. It, of course, is true that men make values, but let us not forget that souls make men."

The Story of a Man and His Business

How Seaman, Kent Co., Ltd., Have Built up a Gigantic Hardwood Flooring Trade Through Persistent Efforts and Aggressive Policies—Two and a Half Million Feet a Month is the Capacity Today

To conceive and create an organization of national scope and make it the largest industry of its kind in the British Empire— and all within the period of twenty years—reads more like a romance than an actual accomplishment. The man behind this great enterprise is Frank Kent, president of the Seaman, Kent Co., Limited, Toronto—another illustration of the utterance of Emerson that any great institution is but the lengthened shadow of some personality whose pluck and perseverance never let go.

At the back of this gigantic undertaking in the flooring field is one who has risen from the ranks and knows the process of wood production from the camp to the consumer. Mr. Kent spent several seasons in the bush, mills and factories getting first hand knowledge of operations and coming closely in contact with men and materials. He is practical and progressive and, in the face of many setbacks and difficulties has steadily persisted and won a foremost place as one of the forceful factors in national development.

The story of the inception and expansion of "Beaver Brand" flooring in popularity and demand is an equally entrancing one. To-day the capacity of the plants of the company is two and a half million feet a month and the investment in factories, equipment, yards, warehouses, limits, etc., represents over a million and a half dollars. The Seaman, Kent Co. is an aggressive organization and its esprit de corps and co-operation are most marked. These characteristics extend into every avenue of the business with the result that quality, merit, dependability, attractiveness and beauty are distinctive of every foot of the output of an organization which has made the name of Seaman, Kent synonymous with that of hardwood flooring, not only in all the provinces of the Dominion but even in foreign fields.

To describe the process of its manufacture, the many operations, the equipment installed, the facilities required, the selling and distribution systems and other details, would require more space than is available at this time. For the present a few figures must satisfy. The dry kiln equipment of the company accommodates 925,000 feet, and the cooling shed capacity is, approximately, 300,000 feet, so that there is dry and cooling accommodation available at any given time of 1,225,000 feet. There is a storage track capacity, for lumber ready for the kilns to the extent of 250,000 feet. The company have, therefore, on hand 1,500,000 feet of lumber constantly on kiln tracks.

Look After Finished Product

The Seaman, Kent Co. believe that quality tells and that every expenditure in the way of care of the finished material is amply justified. The building trade knows that lumber cannot be properly dried and treated in kilns doing custom work. To ensure lumber going to the machines in perfect condition, ample kiln capacity is essential right at the point of manufacture and the process must be supervised by men who are proficient in this particular line. Seaman, Kent Co. recently enlarged the cooling sheds at West Lorne, Ont., which plant, owing to the large number of orders, will shortly be running both night and day. The other factories of the company are located at Meaford and St. Agathe, Que., and there are modern warehouses in Toronto, Montreal, Winnipeg and Edmonton.

Rigid regulations provide for a thorough examination of every foot of hardwood flooring that goes from the mills. Selecting and grading are an exact science with the firm and the purchaser is assured that his completed floors will not run below the standard selected.

Much more might be said regarding the enterprise and development of the Seaman, Kent Co. who are enthusiastic exponents of publicity and have made known far and wide the attractiveness, durability,

Mr. Frank Kent

cleanliness and sanitation of hardwood flooring. The propaganda carried on by them has done much to banish the daily drudgery of household work and make inviting the interior of many a Canadian home. The work has also broadened the business of the average lumber dealer, extended the activities of contractors, improved the appearance of many edifices and generally placed structural art on a higher plane.

From the forest to the polished floor in my lady's salon, banquet hall or assembly room is a story symbolic of the Seaman, Kent Co. Yet when all is told, it must be remembered that back of the institution there is the so-called human element which runs through the entire personnel of the organization. Many heads of the departments have been for years

in the service of the firm, and loyalty and devotion are qualities which tally in the widening and welfare of any business.

Company Built up by Initiative

The staff, which now consists of over three hundred, has been stimulated by the example of the president and general-manager. Mr. Kent's hobby is work and more work, and yet he is a man who is bigger than his business. His life has not run solely along one groove or been confined within shop or office walls. His sympathies and work are cosmopolitan in character and freely has he given of his time and talent to public, philanthropic and humanitarian enterprises. While through initiative and foresight Mr. Kent has built up a company, the largest of its kind under the British flag, he has demonstrated that he is a man of generous motives and wide sympathies. For several terms he was mayor of Meaford where he resided for many years until the company removed its head offices to Toronto in 1920 and became incorporated. He is a director of the West End Y.M.C.A. and chairman of the Boys Farm Committee of the Rotary Club.

At a recent meeting of the Wholesale Lumber Dealers' Association in Toronto, Mr. Kent gave a short review of the great work which he and others are helping to carry out among the under-privileged boys of the city. A home is being conducted at Wilcox Lake, North Yonge St., to look after lads whom Judge Mott of the Juvenile Court considers worthy of being given a chance rather than sending these erring ones to prison or a detention home. Mr. Kent believes that the father should be a companion to his boy, should try to enter into his son's life, understand his aims and ambitions and spend considerable time with the lad. It pays in every way, not alone in morals but in manhood. Much more might be added but a few of the sign-posts of a successful career have already been pointed out.

A Small Start

Mr. Kent was born near Bowmanville just a year before Confederation and spent several years in Bruce County, after which he came to Toronto and became an apprentice in a furniture factory at the low wage of $2.50 per week. Less than twenty years ago in the upper flat of a factory on Northcote Ave., with only a hundred dollars borrowed capital, his real start was made in the flooring line. He would go out and sell the product in his spare time and during daylight hours see that it was turned out. Quality was his slogan and he gained the confidence of the consumers and built up surely but steadily a connection in the trade which has made possible the position held by the Seaman, Kent Co.

Soon after starting a factory in Meaford, which town afforded splendid water shipping facilities, the plant was destroyed by fire, entailing a loss of over $100,000. Characteristically, Mr. Kent did not sit down and bewail his fate but soon commenced rebuilding operations on a larger scale. From that period down to the present the business has shown a gratifying gain and to-day Seaman-Kent is recognized as a great Canadian institution, financed, managed and operated by Canadian capital, brains and brawn. It is an achievement outstanding in the industrial interests of the Dominion.

Knacks in Operating Sanding Machines

The Sander is a Piece of Equipment that Demands Skill if the Stock is Not to be Injured and if Production is to be Kept up to Capacity—Practical Hints Applying to the Three-Drum Sander

By L. R. S.

Sanding and sanding machines continue to be one of the live topics in the woodworking industry. If a survey were made of the new equipment put out for woodworking plants over the last ten years, sanding machines would, I am positive, be easily in the lead. There is little doubt that improvements in standard types of sanders and new and special machines for sanding intricate patterns of turnings and other work, have contributed in a large measure to the advance the furniture industry has made in recent years. If anyone is in doubt that there has been an improvement in this field, all he has to do to remove the doubt is to visit a furniture exhibition and then picture in his mind what a similar exhibition, say ten years ago, would have looked like if placed alongside. The improvement, both in design and quality of workmanship, is well worthy of commendation.

This improvement in design has been brought about largely as a result of new and improved mechanical equipment, of which sanding machines are certainly not the least important. Automatic turning and shaping lathes are worthy of some credit when the achievement in design is being tabulated, but the fact remains that even the product of these machines would not occupy the place they do were it not for the sanding machines which have made possible the effective and economical cleaning up and preparation of that product.

About the first acquaintance we make in the sander family on a tour through a modern plant is the three-drum sander. This may be of two types, the roll-feed and the endless bed. The first mentioned was the first to make its appearance, and it is still in demand where the bulk of the work to be sanded is wide stock. For instance, in planing mills, sash and door factories and interior trim plants the roll-feed sander is almost universally in use.

For doors or similar wide stock the rool-feed sander is, perhaps, a better machine than the endless bed. With an endless bed sander a skilled operator is required. This does not mean that no skill is required in operating the roll-feed machine, but the fact remains that the operator does not require to be quite as skilled as the operator of an endless bed machine. This latter machine has to be watched very closely or trouble can be caused by a too heavy pressure of the rubber discs which comprise the endless bed or

feeding mechanism. I have seen an endless bed sander in the hands of a green man produce stock marked from end to end with impressions of the rubber discs. When I say green, I do not mean green to a sander but simply green to that particular type of machine.

In a furniture factory there is, in my opinion, only one choice in the matter of a triple-drum sander and that is the endless bed machine. Furniture stock includes a great quantity of short pieces, and the endless bed machine is the only one that will handle this class of stock where production in quantities is a factor to be considered.

Too Much Pressure is Often Used

To get down to some of the operating difficulties of the triple drum sander probably the most outstanding is the tendency on the part of some operators to sand with too much pressure. There are some operators who persist in sanding with high pressure, sometimes preferring to use only two drums when the three drums with high pressure would make too deep a cut, instead of using the three drums with lighter pressure.

I have never been able to discover any advantage to be derived from sanding with high pressure. If the cut required is such that three drums with light pressure will not meet the requirements, then there is work for some other machine; the planer, for instance, if the stock to be sanded is solid wood. One cannot get a perfectly level surface by sandpapering with heavy pressure. All woods have spots that are softer than others, and into these soft spots the paper will cut deeper than in the harder spots if the sanding is done with heavy pressure.

Heavy pressure wears out the sandpaper out of all proportion to the amount of work accomplished, and unless the paper is changed frequently, the surface is merely polished, without cutting away the uneven spots. This polishing makes it a hard matter to get a uniform color when staining in the finishing room. Uniform color in staining is more dependent on uniform sanding of the surface to be stained than even some finishers realize.

Effect on Finishing

A surface sanded with coarse or medium paper under heavy pressure tears the fibres so that not even fine paper will remove the fuzz thus raised, and the result is the stain takes very dark. Then when the paper becomes worn and starts to polish instead of cutting, the surface becomes hard and the stain cannot penetrate readily, in consequence of which a lighter shade is produced. Between the two extremes of sharp and worn paper there is such a vast difference in the surfaces produced and the staining effects that one who did not know would scarcely believe that the same stain had been used on each.

Another disadvantage in using heavy pressure is that if there is a coarse, sharp paper on the first drum there will be made in the wood deep scratches which the succeeding drums cannot remove, and these scratches will show up badly after the surface has been stained and varnished.

Keeping the endless bed sander feeding to its capacity has not received the attention in some plants that it should have. It has been my observation on my trips through a great many furniture factories that some operators are exceptionally efficient in keeping their machines operating to capacity while others, although working just as hard, do not keep the machine filled up to anything like capacity.

There is a knack in handling a machine of this kind to get the best results. Perhaps the fault most noticeable where the operators are not succeeding in keeping their machines full is that they will have their truck-load of stock too far away. I have seen operators with their truck loaded with short stock, standing four or five feet away, and the same with the fellow at the rear end. When the stock is placed as near the machine as convenient and not away to one side, the operator has about one-third the trouble keeping up as under the reversed conditions. The shorter the stock, also, the more time required to handle it, and, therefore, the greater the loss when it is not placed as effectually as possible for feeding.

Feeding a Sander

So much for the location of the stock. Now there are about three general ways of feeding small stock: One of the most glaringly inefficient methods is for the operator to pick up a handful of pieces and lay them on the bed of the machine and then feed them through about six or eight inches apart. Of course, there is only one reason for this. If the boss happens to be passing he sees the pile of stock on the bed and thinks the operator is working, while that gentleman has his mind made up that he has solved the problem of seeming to keep the machine up to capacity while at the same time saving himself from continually reaching for stock. Briefly, these fellows are lazy.

Another type of operator is the one who means well and works hard but has not the proper knack of feeding a sander. He will pick up seven or eight pieces of stock, place them on the front of the bed and then pick them up again one by one and place them side by side, keeping the stock as close together as possible. They, no doubt, think that by keeping the stock together in this way that they are absolving themselves from any blame for not keeping the machine going to capacity. However, they are losing at least one-third of the capacity of the machine.

The most effective way of feeding a sander is to place the truck at your side, near one corner of the feeding table. Stock should be carefully piled on the truck, then when you pick it up take both hands, taking from two piles on the truck at once. Now distribute the pieces across the sander bed, dropping two pieces at once from the bottom of the two small piles in your hands. This applies whether you are hopper-feeding or not, because with hopper-feeding you simply keep on replenishing the piles across the sander's width. This is not hard work; in fact, it is easy, and it is made easier the more conveniently the truck is placed.

This method, of course, can only be followed with narrow and short stock. Where the stock to be sanded is long or wide I prefer to feed two pieces at a time. I first feed the two on the right, then two on the left and keep on doing this alternately and the sander is full of stock at all times. It is simply a matter of a man trying to find the easiest way, and not the most difficult.

Removal of Stock from the Machine

The same remarks apply in a large measure to removing the stock as it comes from the machine at the outfeeding end. Some offbearers will pick up one piece at a time and when they do this, it keeps

(Continued on page 66)

In the Heart of a Growing District

The Rastall Lumber Co., Toronto, Have Placed Their New Lumber Yard and Planing Mill Where Their Market is Located—in the Centre of a Rapidly Developing Suburb

The name of Rastall Lumber Company, Limited, first came into being in 1912 when Mr. Rastall, Sr., moved to Toronto from Brantford and started in business for himself after serving twelve years as manager of the Mickle, Dyment plant in that city.

In 1915, Mr. Rastall, Sr., retired from active executive participation in the business and his son, R. A. W. Rastall, following in the footsteps of his father, became managing director of the Rastall Lumber Co. Limited, and has directed the destiny of the firm ever since.

The office and mill was formerly located at 1072 Queen St. East, Toronto, until this spring when the business was transferred to the new location, 2789 Danforth Avenue, at Dawes Rd. in the heart of one of Toronto's fastest growing districts. The new

An interior view of the Rastall Lumber Co's., planing mill

mill and yard were opened recently and the plant is for its size one of the best equipped planing mills and sash and door factories around Toronto. The Rastall concern has long been known as a reliable o ganization and do a large business supplying the building trade with rough and dressed lumber and trim. They are very busy at present with the opening of spring building.

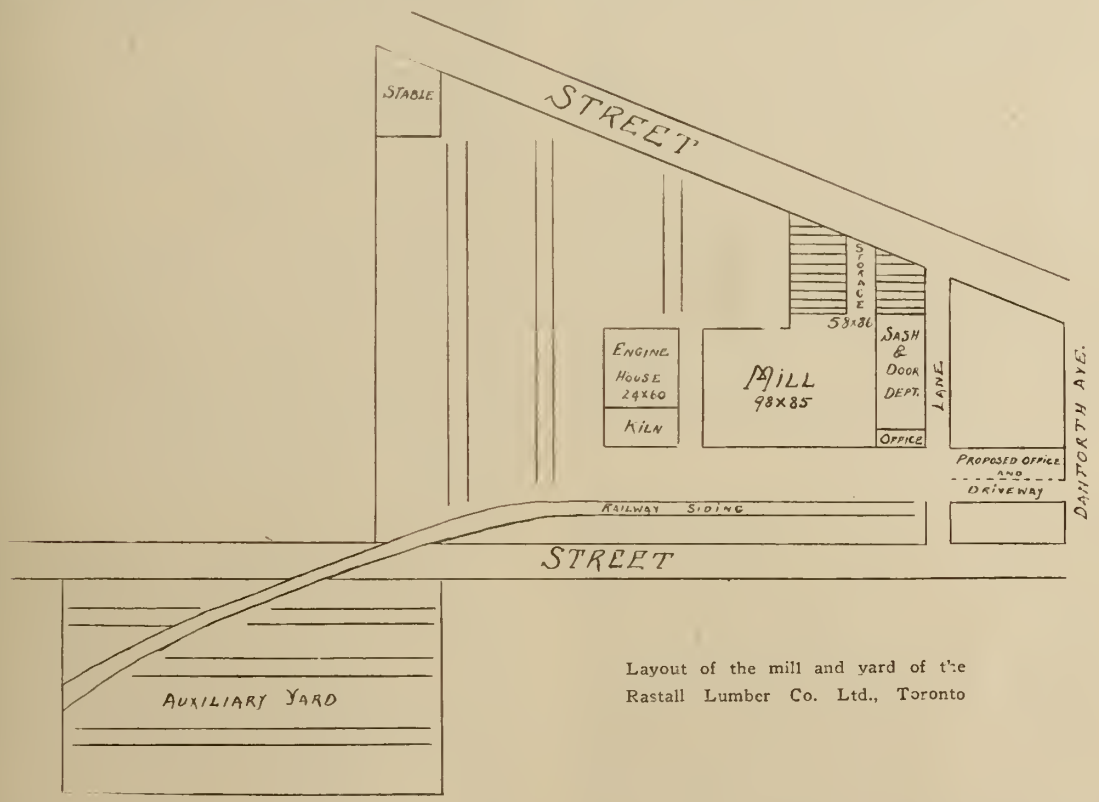
Mr. Rastall related to the representative of the "Canadian Woodworker" with well deserved pride and satisfaction, the story of how the ground on which the new mill and yards now stood, was a bare and unlevel field about twelve months ago and how he undertook the job of grading the ground himself and laying out the piling yards and erecting the buildings under his own direction, all by day labor. "I had one deuce of a busy time of it all right," said Mr. Rastall, who is a young man despite his many responsibilities.

Not only are the buildings new, but all the equipment that they house has been installed just recently by the manufacturers. In the planing department there is a planer and matcher; resaw; a 26" planer; band saw; jointer; power feed rip saw; and a sticker. All these pieces were supplied by Cowan & Co., woodworking machinery manufacturers of Galt, Ont. In the sash and door department there is a cut-off saw; variety rip saw; tenoner; sash and door sticker; chain mortiser; hollow chisel sash relisher and a belt sander. These machines were also supplied by Cowan & Co.

Close beside the mill proper, the dimensions of which are 98 by 85 ft. as shown in the layout sketch, there is a building, 24 by 60 ft., which houses a 150 h.p. Goldie-McCullough engine and a John Inglis boiler. The mill waste is fed into the furnace by means of a blower system recently installed by the Canadian Sirocco Co. Ltd., of Windsor, Ont. In the same building a dry kiln will be installed in the near future. At present the firm's offices are temporarily situated over the engine room, but the intentions of the company are to build an office and drive-way on a 49 foot lane fronting on Danforth Ave.

The accompanying sketch shows the splendid layout of the Rastall Lumber Co's., premises. A G.T.R. siding runs through the main yard and right alongside the wide main doors of the mill. Another feature of the new plant is the position of the storage shed where the dressed material is stored. The lumber when taken from the machines is trucked into the storage room, which is under the same roof as the mill, and piled in neat racks on both sides of the driveway without further exposure to the weather.

The company is not cramped for yard space as they have property across the street which they use for piling rough lumber. They are also using their old site at Queen St. East as a lumber storage yard.



Layout of the mill and yard of the Rastall Lumber Co. Ltd., Toronto

Basswood for Picture Frames and Mouldings

Basswood was formerly the principal wood used for picture frames and moulding, because it works well with tools, finishes well, holds its shape, and is well adapted for the highly decorative composition and gilt work which was very much in demand until recently. In embossing, the tool, which is usually a heavy metal disc, is forced into the wood while hot and leaves an imprint. Basswood exhibits a certain amount of sponginess under this treatment, the wood rising where the imprint is made, so that it is not satisfactory for the purpose. For this reason much smaller quantities are now used in this industry than formerly. Red gum has been very largely substituted in embossed work. Basswood is still used to a large extent for plain moldings which are to be painted, and also as core material for moldings finished in highly figured veneers. It is said to be the most satisfactory core material available.

Time Cards for the Millwork Factory

Their Use is the First Step in the Keeping of Accurate Costs—Workmen Should be Trained to Intelligently Follow the System—Many Advantages to the Proper Use of Time Records

By ROBERT B. BUSH*

The subject that I will discuss naturally divides itself into two parts, which I would like to consider separately—the use of the time cards, and the assembly sheets.

The time cards are the first step in the finding of costs and one of the most vital ones. In fact, without some such way of accurately keeping track of time, any cost system is valueless. We found in our plant that the greatest trouble, at first, was in getting the men to see the importance of these cards; in fact, their very simplicity of use leads the men to think them unnecessary, and this is apt to develop carelessness on their part.

We found it necessary to carefully explain to the men why it is so important that the cards be used carefully and intelligently, especially in the case of the helpers and men of lower intelligence. Another trouble we had at first was in getting them to make out their cards as they progress from a completed job to a new one; they thought it easier to wait until the end of the day and then try to remember what they had done. But once they got the spirit of the thing and caught the "hang" of it, they saw the importance, and readily followed instructions. They realize now that the only thing they have to do is to remember to put down the time they begin a job, and never mind when they finish. That is automatically cared for. Of course, each order is numbered, and all details, cutting bills and instructions are identified by this number, which the men put on the time cards, when they begin work on that particular order.

Another trouble we had at first was in getting the men to differentiate between bench time and machine time. Also I recall one sawyer, who could not see why he should be required to keep his indirect time separate from his productive time. Another man, who was getting a bit old and somewhat peevish, insisted upon keeping his time on a shingle, and at the end of the day, he would copy it off on his time card. He had always used the shingle method, and he didn't see the wherefore of all this newfangled stuff anyway. But all these minor difficulties and troubles soon faded away, and all the men are enthusiastic and anxious to co-operate.

Time Clocks and Numbered Machines

I have sometimes thought that it would be to advantage to have a time clock, placed at some central point in the mill, to which the men could take their cards and have the time of beginning a job recorded on the cards by the clock, thus getting an absolute check on the whole day, and an accurate record of the time on each job. This might be of greater advantage in shops that turn out a number of small orders, than in a plant whose work is composed chiefly of large orders and long runs. It is perfectly obvious that an error of 20 minutes on a job whose total is two or three hours, is more important to detect than this same error on an order taking two to three weeks. In large plants, several clocks might be advisable, in order to save the time of the men going to and from the clocks.

Another idea that occurs to men is to have the machines all numbered, and have the operator and helper place the number of the machine upon which they work, in the column of the time card, designating the bench and machine time. This helps to check any suspected incorrectness in the time cards; it also acts as a spur to the men. If sawyer A can rip 1,000 feet of lumber on saw No. 11 in an hour, then sawyer B knows that the cards will show this fact, and that it is up to him to do as well as A, or better. Besides this, it gives a check on the fitness and condition of each machine. Still another advantage of this lies in the ability of the mill man to offer absolute proof to a customer who might dispute a charge. We can show him the time card with so many hours on such and such a machine.

We find it is of very great advantage to have for the one who figures the time cards a person who is familiar with what the individual workman is doing. For instance, moulder man A puts down on his card four hours time for order No. 4045. This should have been on order No. 4054, a very easy mistake to make, but if the person who figures the time cards knows what moulder man A was working on the day before he will at once know that something may be wrong, and order No. 4054 will get the charge while the other order will not be penalized. A clerk not familiar with conditions would not catch the error.

Transferring Results to Assembly Sheets

The next step in cost finding is the figuring of the time cards and transferring the results to the assembly sheets. There is one of these sheets for each order and each man's time is indicated separately in the daily columns. When the order is completed, the time is extended to the total column at the right of the sheet, summarized, and then transferred to the back of the original order sheet.

In our plant, when we installed this system, we retained much of our old plan to use with the new. In this category was our mill order sheet, to the back of which we now transferred the total time, summarized, used on that job. Here also we assemble the summary of lumber, glue, nails, sandpaper and other supplies used on that particular order. The burdens are added. The profit is then figured and the order sheet sent to the accounting department, for billing and other entries. The order sheets are then filed numerically and cross indexed alphabetically. Each sheet thus shows a complete history of that order. We have a card index in which is entered data which might prove useful to the estimator, and from which it is quickly obtained. The order number appears on the card thereby giving quick reference to the order sheet, should more information be desired

*Address delivered before annual convention of the Eastern Woodworkers Cost Bureau, New York City. Mr. Bush is mill superintendent of the Harris, McHenry & Baker Co., Elmira, N.Y.

than is shown on the card. This is an especially important and valuable feature.

We have a man in the yard who knows the stock thoroughly and whose business it is to see that the mill is stocked with lumber. The foreman hands him a requisition slip, showing the order number, with a request for so many feet of such and such lumber at such and such machine. This yardman has this lumber put into the mill at the machine requiring it. He measures every foot put in, inserts the total on the requisition slip which he then gives to the cost man. If any lumber is left after the order is cut, this is measured back by the yard man and a credit slip given to the cost man. The cost man enters the lumber on the back of the order sheet for use in figuring the cost. This method allows the sawyers to have a supply of lumber always available and they never have to leave their machines to get stock, nor are the saws idle, waiting for lumber.

Importance of Keeping Costs

All this leads up to the realization of the practical value of keeping accounts and dependable cost records. Most mill men know in a general way what their product should cost and how much lumber should be used to make a given order. But without some such system no one really knows what they actually do cost, and how much time is actually spent in producing such an order. It frequently develops that what a foreman or millman thinks a man should accomplish in nine hours is considerably more than that man really does and can produce. And it often is the fault of neither party that the actual results are so different from the guess. The machine may be in need of repair, or the lumber a low grade. Men cannot produce as much in winter, when the shop is apt to be dark and often cold, as they can in summer under different conditions. A great many elements enter that are entirely unsuspected by one who gueses instead of knowing. Results based on facts and experience are much more valuable than when based on judgment, even the judgment of an experienced man.

Not infrequently it seems to those unfamiliar with this system that a great deal of time must be required to figure these costs, and the question arises of its worth-while-ness. But after things get working smoothly, one-half hour a day is ample to figure the cost of the previous day's production.

We reconcile weekly the pay roll as made up by the bookkeeper with our labor distribution sheets showing the machine, bench, indirect and power labor items. We found it better to do this each week, thereby lessening the amount of clerical work at the end of the month. In figuring these distribution sheets, we found it inevitable that there should be a slight difference in figuring fractions of hours. The bookkeeper might figure 40 minutes at 65c. as 44c. while the cost clerk figured it 43c. If these small differences are reconciled each week, the end of the month is relieved of considerable back-checking. This process takes not more than 30 minutes each week and is usually done on Monday. I think I am right in saying that nearly everyone who once installs the system feels that any amount of necessary time is well spent when the results are considered.

Workmen See Value of System

The great value of the system is apparent all along the line. It is of value to the men in the plant each of whom knows that he is responsible to the company for all of his time. He knows that each order is being watched closely and that he is being checked up on production. It is valuable to the foreman who knows that the time turned in by his men is accurate and all accounted for in some way. It gives him opportunity to study production and when a job comes along which it is required to produce cheaply, the foreman knows where production can be speeded up and various little corners cut here and there. The cost man finds the system easy to figure out and assemble, giving him a simple, sure and concise result to show to the estimator and proprietor. The final results are of untold value to the estimator in figuring jobs of similar character. He knows just what it did cost to run 10,000 feet of casing or make a kitchen dresser, and he does not have to rely on what he thinks it should cost. His judgment may be excellent and probably he knows, often from past personal experience, what it should cost to produce a certain article. But the big thing in his estimating future jobs is to know exactly how much time and lumber were consumed in producing a similar article last week and last month. This we give him in accurate, definite form, quickly and easily, from the card index, or from the order sheets if he wants more detailed information. And the best of it all is that the information is cumulative and the longer the system is used the more valuable the results become.

The system brings out the weak spots in the factory and helps to weed out the men who can't or at least don't produce what past experience and good judgment say they should. It shows which machines are not functioning properly, and indicates when it is profitable to scrap a machine and install a more modern one. Another very valuable feature is the comparison of cost between using high grade lumber and low grade lumber. This difference really amounts to more than is at first apparent and it is very interesting to work out comparisons along these lines.

Comparative Analysis

We have what we call a "dope sheet," which contains information gathered from results of each large order. We show in one column the amount of lumber which the job should take, based on the estimate, and making allowance for waste. The next column shows how much lumber it really did take, giving us percentages of waste. The next two columns show how much 1's and 2's and how much No. 1 common and lower grade were used. We thereby arrive at the difference in percentage of waste between using high grade and low grade stock. In another column, we show amount of time in rough cutting the stock, and easily arrive at a comparison of the time consumed in cutting the different grades. These comparisons allow us to determine which grade of stock is more economical to use. We have several other columns, giving a quick analysis of the whole order, easy to compare with preceding orders. Here again comes in the valuable feature of cumulative results which increase in value as time goes on. Further refinements of this will be suggested to the cost man who will put a little care and thought on the subject, and I know that the results will be highly interesting and valuable.

I have made mention of the value of the cards and assembly sheets in proving bills. A disgruntled and irate customer, who thinks he has been overcharged

is often not easy to handle. He is sure that all mill men are robbers and that the particular one he is dealing with is the Captain Kidd of them all. If we can turn over the order sheet and show him exactly how much lumber went into his order, how many machine and bench hours were consumed in making it and show him the addition of a reasonable profit to arrive at his charge, in nine cases out of ten we have made him feel that we aren't such cut throats after all, and he goes away feeling better, and is turned into that most valuable asset, of any business—a satisfied customer.

I might say in closing that all these results must be developed and used intelligently and with understanding to obtain their benefits. You cannot get a successful check on your business costs unless you study those very carefully. It's as important to do this as to watch market quotations or to keep tabs on credits. It is a much greater indication of mismanagement to lose money in making a thing than to lose the account after it is sold.

Eternal vigilance is the price of success and one of the most important places to exercise this vigilance is in knowing how much your product is costing you, and which class of product is profitable and which is not paying. So I say keep your costs accurately and carefully, keep the system up to date and not lagging behind. And then take time and trouble to study its results from all angles. Good hard common sense is as necessary here as everywhere else. Know what you are doing and do it intelligently.

Important Problems Threshed Out at Millwork Cost Bureau Meeting

An event that was of direct interest to and had an important bearing on the woodworking industry of Canada was the annual convention of the Millwork Cost Bureau, which was held in the Congress Hotel, Chicago, on April 18th and 19th.

The Millwork Cost Bureau is an international organization that numbers several Canadian firms among its members. So valuable is the work which it is performing that it is recognized that its annual meetings are important factors in furthering the interests of the millwork industry. This year's convention embodied a number of unique developments; for example, it was the first time in the annals of the sash and door world that the architectural profession sat in open conference with an international convention of the millwork industry representative of all its branches. The meeting also marked the first attempt to adopt a uniform millwork contract and to consider in a broad way the subject of publicity as applied to the industry. The other matters scheduled for discussion and action were equally important.

Besides the presentation of reports, the passing of resolutions, election of officers and other business details, the programme included the following papers, addresses or discussions:—

"A Uniform Millwork Contract for National Adoption," by J. A. Loetscher, chairman of the Uniform Contract Committee.

"What of the Future?" by H. T. Didesch, technical director of the Millwork Cost Bureau.

"Recent Developments in the Forestry Situation," by Albert Benjamin Cone, Associate Editor of the "Lumber World Review."

"How May the Industry Foster Apprentice Training?" by F. J. Moss, president of the American Sash and Door Co., Kansas City, Mo.

"Publicity for the Industry and Its Products," by L. R. Putman, Ferry-Hanly Advertising Co., Chicago.

"Advantages of an Estimator's Club," by O. D. Haskett, representing mill owners, and Ray H. Davidson, representing the estimators.

"Hardwood Grades for Millwork Consumption," by J. M. Pritchard, secretary-manager of the Hardwood Manufacturers' Institute.

"A Solution of the Related Shortcomings of Architects and Millmen," on which subject the manufacturer's viewpoint was presented by J. P. Larson, secretary of the St. Louis Millmen's Association, and the architect's viewpoint by E. S. Hall, architect, of Chicago.

The next issue of the "Canadian Woodworker" will present in greater detail some phases of the meeting.

Hand Book Dealing with Upholstery and Wicker Trades

The 1923 edition of the hand book of the Allied Interior Decorative Trades has made its appearance and is, in many ways, an improvement over previous issues. Having nearly 500 pages it contains 351 classifications covering the production and distribution of furniture, carpets, draperies, curtains, upholstering materials and other furniture and furnishing accessories. A comprehensive index facilitates the findings of special items. In addition to the list of firms which comprises the bulk of the Hand Book, there are some very excellent reference features, including a thumbnail chart of period style characteristics; standard widths of upholstery goods and curtains; miniature encyclopaedia of upholstery textiles; trade names of upholstery and drapery fabrics and a quick reference color chart. This hand book is published by Clifford & Lawton, New York City.

Knacks in Operating Sanding Machines

(Continued from page 61)

one piece at a time and when they do this, it keeps them stepping to prevent some pieces falling on the floor. Others, more experienced, will wait until the outfeeding table is full of stock and then with one sweep with both hands will pile the stock on the whole width of the table into two piles and remove it to the truck which is placed conveniently, and wait for the next cargo. With an efficient operator the offbearer can use some system in removing stock. Where the operator is haphazard in his feeding and inefficient, the offbearer has an unenviable life.

The other sanders, belt, disc, drum, stroke, etc., all have their peculiarities and require some study to obtain the best results. In a future issue it may be possible to go into some of the difficulties of the less experienced operators for the benefit of themselves. There are not many men who will refuse to listen if someone can tell them how they can do their work with less effort to themselves.

You will break the chain of the mortiser if you neglect to sharpen it.

Accidents are the fault of some. Don't let the fault be yours.

How Wooden Chairs Should be Crated

The Freight Container Bureau of the American Railway Association Issues Tentative Specifications that Indicate Methods of Reducing Damages in Transit

On March 10, 1922 Freight Container Bureau Circular No. 2, containing tentative recommended practices covering the packing of Metallic or Wooden Chairs, was distributed by the American Railway Association for discussion and trial by interested shippers. Since that time the proposed specifictaion has been discussed by various associations and groups of shippers and many conferences have been held between committees of associations, individual shippers and representatives of the Freight Container Bureau. Discussion has brought out the fact that while there are a few points where the opinions of interested shippers and engineers of the Freight Container Bureau are not in exact accord, nevertheless many other points have been mutually agreed to as being proper. The revised tentative specification below is based on the results of conferences with trade associations, shippers, railroad officials and other interested parties, as well as on the revised draft of Freight Container Bureau Circular No. 2 prepared by the Committee of Chair Traffic Men appointed by the Traffic Conference of the National Association of Chair Manufacturers on May 17, 1922.

The tentative specification below was in general concurred in the Traffic Committee of the National Association of Chair Manufacturers at a meeting held on September 8 and 9, 1922, except where otherwise noted.

1. The following chairs are not covered by or included in this specification: Chairs constructed of bamboo, cane, fibre, grass, rattan, reed, willow, or a combination of those materials with wood or iron (except that wooden chairs may have inserts of bamboo, cane fabric, fibre, grass, leather, rattan, reed or willow, in backs, panels or seats); camp, folding, barber, dental, surgeon, invalid, revolving.

As it is impossible at this time to formulate definite comprehensive specifications for the shipment of all the various special types of chairs, because the investigation covering the problems in connection with their transportation has not been completed, this paragraph is for the purpose of naming those types which are not included in the specification.

Definitions

2. (a) **"Finished"**—The term "finished" applies to Wooden Articles after they have passed the stage of manufacture provided for in Section 2 of Rule 22 of the Consolidated Freight Classification.

(b) **"In the White"**—The term "in the white" applies to Wooden Articles when further manufactured than provided for in Section 1 of Rule 22 of the Consolidated Freight Classification and may include one coat of priming, but does not apply when the articles have been painted or varnished.

(c) **"Knocked Down" (K. D.)**—Articles "knocked down" (K. D.) involve taking apart the article ship ped in such a manner as to reduce materially the space occupied; merely separating the article into parts without reducing the bulk will not constitute knocking down.

(d) **"Set Up" (S. U.)**—Chairs are considered "set up" (S. U.) unless included within the meaning of knocked down (K. D.).

(e) **"Wrapping"**—The covering with paper excelsior pads, etc., for the purpose of protecting all or a part of the chairs from injury during transit.

(f) **"Bundles"**—One or more set up (S. U.) or knocked down (K. D.) chairs tied into one package for convenient handling in transportation but not boxed or crated.

(g) **"Nested"**—When three or more chairs are placed one within the other so that each upper chair will not project above the next lower one more than one-third (1/3) of its height.

This paragraph defines those terms whose meaning might be in doubt, in order that there can be no question at to their meaning as used in this specification.

Packing

3. Wooden chairs, finished, must be packed in accordance with the schedule in paragraph 4. (where bundles are specified, boxes or crates may be used if made in accordance with paragraphs 5 and 6).

In many cases it is advisable on account of design and construction of the chair to pack in crates or boxes even though value, etc., may not be such as to justify requiring it under this specification. The desirability of requiring crates or boxes in such instances is evident, but so far it has not been found practicable to specify definitely. For the present such extra precautions are left to the judgment of the shipper.

4. When chairs are allowed to be shipped in bundles they must be packed as follows:

Value per dozen at time and place of shipment	Packing
(a) $00.00 to $15.00	Either wrapped or unwrapped.
(b) $15.01 to $24.00	S. U. Chairs must have back posts, top slats and outside edge of seat wrapped with paper. It is strongly recommended that seats of chairs be protected from each other by the use of one thickness of paper or three thicknesses of newspaper. K. D. chairs if in bundles, nested must have seat of top chair, the top slats and back posts of top and bottom chairs wrapped with paper. Chair tops with high arms must have top slats, back posts, arms and exposed seats wrapped with paper.
(c) $24.01 to $36.00	Chairs must have exposed parts protected by excelsior pads or paper pads and the wrapping requirement of (b) must be complied with except where parts are protected by such pads.
(d) $36.01 and up	Except in carload shipments consigned to one consignee, in which case they must be packed in accordance with the requirements of (c), all chairs must be shipped in boxes or crates. See paragraphs 5 and 6.

As a general principle practically all chairs should be crated or boxed. This is economically impossible, so a compromise is necessary and the following is reasonable: They should be carefully wrapped if of a value and finish such that scratches, dents, etc., will materially reduce their marketability at standard price; they should be further protected whenever the value will

permit; and they should be crated or boxed when of sufficient value to absorb the increased cost due to such packing.

Due to the fact that the amount paid on L. C. L. shipments of furniture is approximately four times the damage paid on C. L. shipments, it is apparent that the greatest improvement in packing should be made on the L. C. L. shipment.

In this connection, on a series of shipments made by one chair manufacturer where the number of shipments, the value of the chairs and distance shipped were all approximately equal, investigation developed that 0.4% of the chairs in carload shipments reached the consignee broken while 3.5% of the chairs in L. C. L. shipments were broken.

At the present time the Classification provides for the shipment of metallic or wooden chairs without wrapping, with a value at time and place of shipment not exceeding $24.00 per dozen, while it is proposed to reduce to $15.00 per dozen. It appears proper that this should be done for several reasons, chief of which is the fact that before the beginning of the War and the accompanying higher prices of chairs, the carriers allowed only chairs costing under $12.00 per dozen to be shipped without wrapping. That figure was subsequently raised to $18.00 and then to $24.00, so that the original $12.00 per dozen chairs, when their value increased, could be shipped in the same way as before. As prices have receded considerably, the figure should again be lowered, as it is now possible for the shipper to ship chairs without wrapping which formerly were required to be wrapped.

On the medium priced chairs this specification requires the use of slightly better packing than is required by the Consolidated Classification at the present time.

For high-priced chairs this specification requires crating or boxing of chairs shipped in L. C. L. movement with a value exceeding $36.00 per dozen. Chairs shipped in C. L. movements consigned to one consignee are not required to be crated or boxed but must be wrapped in the same manner as chairs valued from $24.00 to $36.00 per dozen when shipped in L. C. L. movements.

While these requirements may appear drastic to some few shippers, many shippers and retailers believe that they are proper. It is the opinion of the latter that if all the manufacturers were required to properly protect their shipments in the same manner, the cost of the packing would be included directly in the cost of the chairs and all manufacturers would then be on an equal basis. Furthermore, it is felt that the slight increase in cost of the chair to the retailer would be more than overcome by the saving in cot of refinishing by the consignee, expense incurred in filing claims, etc. For those retailers are generally of the opinion that these proposed specifications should prove of considerable value and will be satisfactory.

The Committee of Chair Traffic Men of the National Association of Chair Manufacturers which was appointed by the Traffic Conference of the Association on May 17, 1922, in their revised draft of Freight Container Bureau Circular No. 2 state that they believe that the packing requirements as shown in paragraph 4 (a), (b), (c) and (d) should be changed to the following:

Instead of Section (b) reading from $15.01 to $24.00, that it should read from $15.01 to $36.00.

Section (c) should be changed to read $36.01 to $60.00 for chairs constructed of walnut, mahogany, gum or a combination of those woods. There should then be inserted a provision stating that chairs constructed of walnut, mahogany, gum or a combination of those woods, having an invoice value of $60.00 per dozen or higher must be boxed or crated.

It will be noted that if the foregoing recommendation were carried out no chairs other than those constructed of walnut, mahogany, gum or a combination of those woods, would have to be crated and that chairs required to be crated in L. C. L. shipments only if their value exceed $60.00 per dozen.

Three Southern chair manufacturers just recently sent out a form with each shipment of uncrated rocking chairs to be filled out by consignees upon receipt of the chairs; records were obtained on a total of 167 shipments and while the information obtained was probably not based on a sufficient number of shipments, these results indicated that the value of the chair within reasonable limits made little difference in the number of chairs that were damaged on arrival at the consignee and also showed that on chairs from the same shipper constructed of both oak and gum, an equal number of each kind was damaged for the same number of each kind that was originally shipped.

The record of shipments from one chair company showed that 2.2% of the chairs shipped in L. C. L. shipments reached the consignee in damaged condition while L. C. L. shipments from another chair company showed that 3.5% of their chairs reached consignee in a damaged condition. In both cases the average value of the chairs was about $50.00 per dozen and the rocking chairs were shipped with the rockers detached. Another chair company shipping chairs with the rockers attached, the value of the chairs averaging about $40.00 per dozen, found that 4.7% of all L. C. L. chairs shipped and on which the consignee sent in reports were broken.

These percentages of breakages indicate that a considerable improvement in the condition in which chairs reach the consignee can and should be made. It is believed that if the packing recommendations of the Freight Container Bureau as given in this tentative specification are followed a noticeable improvement in the reduction of damages to shipments will be apparent whereas, if the recommendations of the Traffic Committee be followed in regard to damaged chair shipments will be improved but little.

It is hoped that shippers will endeavor to determine just what percentage of their shipments reach the consignee in a damaged condition as it is felt that if the true condition were known practically all shippers would follow the provisions of this tentative specification, as many shippers are now doing.

(e) Rockers of rocking chairs must be detached, placed inside the bundle and securely tied to the chair proper at not less than two places with a twine having a breaking strength of not less than 140 pounds.

By requiring the rockers to be detached and tied to the bundle, it is believed that damages to rocking chairs will be very considerably reduced. Investigation indicates that rockers in place are the principal source of trouble to this class of chair. Their removal before shipment is considered to be of the utmost importance when shipment is not made in boxes or crates.

In this connection the results of the previously mentioned trial shipments, as reported by the consignee, showed that on shipments from one manufacturer 2.2% of the rocking chairs shipped reached consignee broken, another had 3.5% of his shipments broken, both of those shippers shipping with the rockers detached, while the third manufacturer who ships with the rockers attached had 4.7% of his shipments broken.

Some shippers believe that it is impracticable to ship rocking chairs with the rockers detached due to the fact that consignees could not set them up properly. Many other shippers, however, say that that is an erron eous opinion. They say that all difficulty can be overcome by finishing the chairs in the usual way, except that no glue on the rockers, and detaching the rockers after the glue in the other joints has set. Many manufacturers are doing this successfully and the consignees are found to be not only satisfied but desirous of receiving their shipments in this way as it avoids claims and other troubles.

The following is the recommendation of the Traffic Committee of the National Association of Chair Manufacturers. "'Rockers of rocking chairs must be detached where practicable and securely tied to the chair proper at not less than two places with twine having a breaking strength of not less than 140 pounds.

"NOTE.—By practicable is meant such construction as makes it possible to remove runners without injury to the chair."

(f) All chairs in each bundle must be securely tied together with a twine having a breaking strength of not less than 140 pounds. For chairs S. U. the ties must be at not less than four places; namely, near each upper end of back leg posts. It is strongly

recommended that a soft unfinished twine be used so as to avoid possible gouging, marring and scratching of soft wood furniture.

(g) All paper, pads and other wrappings must be securely tied in place with a twine having a breaking strength of not less than 35 pounds. It is strongly recommended that a soft unfinished twine be used so as to avoid possible gouging, marring and scratching of soft wood furniture.

Lighter twines than those having a breaking strength of 140 pounds and 35 pounds, respectively, have been found to be inefficient and many shippers have of their own volition adopted the stronger twine and it should be required. The tying at four places, instead of two as is frequently done is especially important as observation has shown many cases of trouble when only two ties are used, while, the bundles with four ties placed as indicated appear to be sufficiently well secured.

(h) Paper used in wrapping uncrated chairs must be kraft weighing not less than 40 pounds per ream (480 sheets, 24" x 36"), or sulphite weighing not less than 125 pounds per ream (480 sheets 40" x 48"), or its equivalent as given in the following table. For crated chairs a lighter paper as shown below is allowed:

Paper for the Outside Wrapper of Chairs

Paper made of	Weight per ream (480—24" x 36") Pounds		Mullen Test Minimum No. of Points	
	Crat'd	Uncrtd	Cr't'd	Uncrtd
No. 1 Sulphite (100% Sulphate) No. 1 Kraft	25	40	23	38
No. 2 Sulphate (Chemical Pulp) and (Mechanically Ground Wood) No. 2 Kraft	30	45	25	38
No. 1 Sulphate (100% Sulphite) Manila	40	55	25	38
Fibre (Sulphite, and not over 20% Mechanically Ground Wood, Dry or Water Finish)	45	..	25	..
Rope Stock Paper (Not less than 40% Rope Stock, remainder Chemical Pulp ...	25	40	20	32
Newspapers	For tying around legs, posts, rungs and stretchers only, not less than four sheets.			

The purpose of covering finished surfaces of furniture with paper is to protect the finish from dust, spatterings of oil or grease and moisture. Various different kinds of paper are included in this specification but they have been so specified that all are of approximately equal strength. The reason for specifying the particular weights as given, is that investigation has brought out the fact that most shippers are using either the weight of paper specified or a heavier paper, and that a lighter weight paper would be unsuitable due to lack of substance and strangth to resist abrasion and tearing.

(i) Burlap may be used where paper is specified. Burlap when used must weigh not less than seven ounces to the running yard of 40" in width.

A good burlap is, of couse, better than paper when not placed against a highly finished surface and should therefore be allowed.

(j) Excelsior pads must be made with a kraft paper wrapper weighing not less than 24 pounds per ream (480 sheets 24" x 36") and having a Mullen test of not less than 22 points. The excelsior should be made from sound live wood and be free of knots, splinters and undivided bunches of excelsior. The completed pad must be uniform in thickness and be free of bunches and thin spots, and weigh not less than 2 ounces per square foot.

Paper pads, i.e., pads made entirely of paper, must be made of kraft, manilla, or rope stock paper weighing not less than 80 lbs. per ream (480 sheets 24" x 36") and so folded that the pad will consist of not less than three thicknesses of the paper.

Filled paper pads other than excelsior must have for a wrapper, paper of the same kind and weight as that prescribed for excelsior pads, namely 25 pound kraft (480 sheets 24" x 36"). The filling must be of such character and in such amount, that the completed pad will be as efficient as an equivalent excelsior pad.

This is in accordance with present good practice.

Packing in Crates

5. As required by Consolidated Freight Classification Number 3. New and definite specifications will be formulated as soon as data are available.

Packing in Boxes

6. As required by Consolidated Freight Classification Number 3. New and definite specifications will be formulated as soon as data are available.

Sufficient data are not yet available to prescribe definite specifications. Investigation is now going on that will enable the design and construction of crates and boxes for the shipment of chairs to be specified in such a way that efficiency and economy will be obtained.

Marking

7. (a) Packages must be marked in accordance with the requirements of the Consolidated Freight Classification.

General requirements for marking are of course necessary and must be observed. The requirement for the shipper's name, address and pattern number on L. C. L. shipments is already being followed by many shippers with very satisfactory results, and is in our opinion a marked advance in the line of preventing the total loss of astray shipments. The bundle will be located somewhere and the shipper advised, and he can give orders for disposition which will obviate much inconvenience and the necessity of filing many claims.

Loading in Cars

8. (a) Two or more 7/8" x 3 7/8" or wider strips must be nailed across inside of the car door frames, on all carload shipments, in such manner as to prevent any of the lading from coming in contact with the car doors.

(b) It is strongly recommended that carload shipments be so loaded and, if necessary, braced with 7/8" x 3 7/8" or wider bracing, so that there can be no possibility of the lading shifting in transit.

These are really loading rules rather than requirements for packing, but their importance is sufficient to demand mention.

The necessity for stripping across doorways cannot be emphasized too strongly. A great deal of damage occurs due to lading lading falling against the doors and necessitating their being forced open with the result that chairs are frequently broken.

The bracing of the load inside the car to prevent shifting is so well recognized by careful loaders as a necessity that no comments are necessary.

Glue Makers Enlarge Plant

The Kane Mfg. Co., Chicago, manufacturers of vegetable glue, have recently made additions to their plant which enable them to produce 10,000 lbs. of glue per hour. The plant is now running 20 hours a day in two shifts.

The Thurn-Maxson Lumber Co. of South Bend are New Hardwood Wholesalers

Messrs. George O. Thurn and Ray B. Maxson, who are owners of the Charles O. Maus Lumber Co., South Bend, Ind., have formed a new company known as the Thurn-Maxson Lumber Co. with offices in Room 213, Citizen's National Bank Building, South Bend.

This new company will conduct a general wholesale hardwood business dealing in northern and southern hardwoods and making a specialty of Canadian birch. In this latter connection the company will be the sole representative in the Central Western States for Canadian birch, elm and basswood produced by Edward Clark & Sons, Limited, of Toronto, Ont. This firm will have a production of birch alone this season of 20,000,000 feet, a great part of which will be marketed in the United States through the arrangement with the Thurn-Maxson Lumber Co.

Both Mr. Thurn and Mr. Maxson have long been identified with the hardwood lumber business. The former for many years was lumber purchasing agent for the Studebaker Corporation, and for the last five years was secretary and sales manager of the Cyrus C. Shafer Lumber Co. Mr. Maxson succeeded Mr. Thurn with the Studebaker Corporation, and in 1921 became engaged in the wholesale and commission business. Last year, along with Mr. Charles O. Maus, he formed the Charles O. Maus Lumber Co. After a year's operation Mr. Maxson purchased from Mr. Maus his interest in the company, subsequently turning it over to Mr. Thurn.

G. O. Thurn R. B. Maxson

The new firm, the Thurn-Maxson Lumber Co., will eventually take over all the assets and liabilities of the Charles O. Maus Lumber Co.

Summer Furniture is a Profitable Line for Many Manufacturers

Box Makers Concerned Over Labor Troubles

At the Annual Meeting of the National Association of Box Manufacturers, This Seemed to be the Topic of Most Interest—Several Canadian Firms Join the Organization

Several Canadian box producers were added to the membership of the National Association of Box Manufacturers at the annual meeting of the organization which was held in Chicago on April 4, 5 and 6. These were: James Davidson's Sons, Ottawa; Firstbrook Bros., Toronto; Keewatin Lumber Co., Ltd., Kenora; Kilgour Mfg. Co., Hamilton; Ontario Box Co., Ltd., Hamilton; Zimmerman Bros., Ltd., Tavistock, Ont; Meyer, Thomas Co., Ltd., Montreal, and Parisean Freres, Ltd., Montreal.

The meeting was very successful in every respect and all phases of the box industry were thoroughly discussed. The nature of the problems that came before the convention is indicated in the address of the president, B. F. Masters, extracts from which are printed herewith:

"Personally, I am inclined to believe there will be no recession in the price of lumber for many months to come. It may come, but we will have some premonition which, so far as I have been able to observe, has not manifested itself to this time, and I think we should endeavor to sell our product upon the basis of the replacement value of lumber today, in so far as we can do so without inviting substitute packages.

"I find that where men do not seem to agree with respect to what they should sell their product for, it is because there is a fundamental condition in the beginning with reference to the cost of the material which they are using. I find some managers who have a large stock of lumber on hand, accumulated perhaps for a few months, whose average cost is very much below that to the man who buys lumber on the market today or within a week or ten days, or two weeks back. Therefore, the man who is obliged to buy his lumber on the market today feels that somebody down the line with whom he is competing is making unreasonable and ridiculously low prices. The man who is making the low price figures is getting a good profit on his business, perhaps because he figures his cost upon the prime cost of lumber bought possibly a year ago.

"Those are some of the incongruities that we find when we talk to each other, unless we analyze our differences of cost and differences of opinion and determine about where we start.

Labor Troubles

"It seems to me about the most serious problem the manufacturer has to meet at this time is to properly solve his labor problems. We find that more money, more wages, and advances in wages do not meet the issue by any means. We do not get any greater number of employees, we do not get any greater service or any greater output when we raise wages. We have been in Chicago endeavoring to put into effect a premium or wage incentive plan which with some of our employees is serving the purpose of stimulating them to greater effort. We endeavor to measure the output of work that each man should have, and if he does more, then he is paid additional for that proportionately. We have not yet been able to measure the output of each man to determine what men should do because some men will do twice as much work of a particular character as others. We find one man sawing on a given box will give 40 per cent more than another man—not the man next to him, perhaps, because the spirit of aggressiveness and push is somewhat contagious, but if you get a man over in the corner by himself where he has nobody to set the pace, nobody to watch him, unless he is above the ordinary drone he does about 40 per cent as much as the good man who has an ambition to achieve. We haven't a union labor in Chicago any more, and therefore we are trying to work out this wage premium or wage incentive, as we term it. We look upon the labor situation as the most difficult thing we have to contend with in the near future.

Prices Are Stabilized

"Reports indicated that it was agreed that lumber prices were very well stabilized—at least well into the third quarter. There was some prediction that prices might be lower because of the large volume and output from the mills to meet the demands of the building trades, which might produce a large amount of low grade lumber, and consequently there might be a softening in the market of box lumber. On the whole, however, the reports as I analyzed them lead me to believe we might easily expect a well stabilized market, at least well into the third quarter.

"Reports indicated further that the demand was better than it had been—that the demand for our product was improving and increasing. Some of our members in various sections said that they had all the business they needed—all they cared for. There seems to have been sort of a let-up in the fight for business on an unreasonably competitive price and, on the whole, it indicated a more healthy situation in the industry than at any time within the last three or four years.

"What was said of our business seems to reflect the opinion of those present upon the general business conditions of the country. Indeed, I have always maintained that our industry, however humble it may be, is the best barometer of general business conditions that you can have. People don't buy boxes unless they have use for them, and they don't have use for them unless they have orders for goods they must ship in the boxes they buy from us. So that in the circle of events and the natural evolution of demands, the manufacturer and shipping industry must have orders for their product, and we know when they buy our product they buy it primarily and only because they need it. They never buy it in a sepculative manner like merchants buy sugar, box manufacturers buy lumber, nails and other products. So we feel the purchase of our product is a real indication of a demand for containers to ship merchandise that has been sold, because the merchandise

packed in our boxes is usually sold. Ordinarily our business is a barometer for the demand for general merchandise and manufactured products.

The Question of Wages

"I think it was the general impression of the meeting that labor conditions were somewhat restless. I personally feel that the less we say about that the better, and yet we must face the situation that our labor conditions are not as hopeful, not as agreeable as they should be. I believe we all feel the same on the subject. We sorely need help; we must increase the pay. In many sections we have made slight increases, and we expect to make more. An increase in wages, however, does not accomplish the thing that we intend it to. Higher wages do not seem to stimulate labor to higher production; it does not seem to satisfy labor to the extent of the demand; there is a restless spirit in the minds of the laboring man, and I suspect it is quite natural and quite justified when you compare the cost of living with wages. I believe that you or I, or anyone working in the box business or any business, will find that to be the case. I don't believe that is a feature peculiar to our industry at all. It is my own thought that in time the question of compensation for our labor and our help is going to be worked out to the satisfaction ot all concerned. We don't feel that way today, but are hopeful that this condition will work itseif out the same as many of the other problems have that industry has had to meet within the last few years.

Lumber standardization was an important topic of discussion and was dealt with by W. A. Durgin, chief of the division of simplified practice, Department of Commerce, Washington, D. C., at the concluding session.

Mr. Durgin described briefly the progress made on standardized lumber sizes and grades during the last ten months, stating that with the continuation of such efforts it is probable that by next fall the lumber industry will have something definite to present in this connection.

Mr. Durgin said that the main points of the standardization program were nomenclature, grades and sizes, which when worked out to the satisfaction of all parties concerned would lead to the elimination of waste in the lumber industry. A recognized thickness for one-inch boards must be worked out by all interests, continued Mr. Durgin. In the New York section there are seven sizes sold as one-inch. Practically all the manufacturers' associations have agreed on 25/32-inch as a standard for one-inch lumber with the exception of the North Carolina Pine Association, from which source the box manufacturers buy large quantities of North Carolina pine. If the box manufacturers will agree to this thickness, continued Mr. Durgin, it will greatly help this matter of uniformity of standards.

B. F. Masters, of Chicago, chairman of the board of governors, National Association of Box Manufacturers, in commenting on Mr. Durgin's remarks said that if the public can be persuaded to use lumber made of ¾-inch resawed and accept it as ⅜-inch, he did not think the box manufacturers would object. Continuing, Mr. Masters said: "The object of the National Association of Box Manufacturers has been to establish a higher and not a lower standard. We have always gone on the theory that the thicker the lumber the stronger the box. The association is in favor of this standardization movement, and if it can be proved that 25/32-inch will meet the requirements of our customers and the governmental department specifications can be modified to allow for this size in place of 13/16-inch, I don't believe that our members will object."

J. A. Newlin stated that the results of tests carried on at the Forest Products Laboratory at Madison, Wis., showed 13/16-inch was about the thinnest lumber which could be used with safety for boxes to get the best results in transportation.

Mr. Durgin promised the co-operation of the Department of Commerce in trying to get the governmental departments to modify their specifications so as to permit 25/32-inch lumber to be used, providing this thickness is adopted as standard for one-inch lumber and that the railroads and large shippers accept it.

Thickness Used by Box Industry

Returns received from a questionnaire recently issued to the wood box industry by the National Association of Box Manufacturers, asking for information that could be presented to the Central Committee on Lumber Standards to enable the association to determine the percentage of thickness of softwood that is now being used, show that 9 per cent of the softwood used is 25/32-inch or less in thickness. Of 4/4 boards 59 per cent would dress two sides 13/16 and ⅞-inch; of thickness greater than 4/4, including hardwood, 32 per cent. The percentage by thicknesses follows:

Thickness of material Inches—	Percentage used by wood box industry
¾	3
25/32	6
13/16	40
⅞	19
Hardwoods, all thicknesses, and softwoods 5/4-inch and greater in thickness	32
	100

A large proportion of the amount used is what might be termed "sawmill waste," i.e., boards that are of too low a grade to go into other commercial uses. The cost of this low grade raw material is influenced by the supply and demand for the higher grades.

Box Makers of Ontario and Quebec Organize

A new organization known as the Box Manufacturers' Association of Ontario and Quebec was formed recently. The first meeting was held in the Board of Trade Rooms at Toronto. G. R. Hunt, of Firstbrook Bros., Toronto, was elected chairman, pro tem, and H. Boultbee, of Toronto, secretary. There was a good attendance at the gathering which decided to hold the first annual meeting of the Association in the Board of Trade Rooms, Toronto, on Friday April 27th at 10 a.m., when a president, vice-president and executive will be elected for the coming year.

Holland Enquiry for Plywood

A concern in Holland is desirous of hearing from Canadian exporters of plywood and other wood products. Terms, prices, etc. For further information write the editor. Refer to inquiry 1477.

Machinery & Equipment

Adjustable Belt Sander

A portable motor driven belt sander that has the grinding bed capable of being set at any position from horizontal to vertical is the latest production of the Porter-Cable Machine Co., Syracuse, N. Y. The table can be tilted by means of a hand wheel 45 deg. down and 15 deg. up. This adjustable feature makes the machine convenient and adaptable for different classes of work. When the grinding bed is used in the horizontal position, the table is removable and replaced by a stop-rod which acts as a stop when sanding small pieces. To ensure positive parallel running of the belt, adjusting screws are provided which are used in securing the required tension or in changing belts.

Porter-Cable adjustable sander

Guards amply protect all moving parts, a special detachable one being provided to cover the upper part of the belt when used in the vertical position, thus eliminating danger to the operator.

The sander is direct driven by a ball bearing motor which is totally enclosed. All moving parts are equipped with ball bearings, a special self-aligning S.K.F. type being used on the adjusting roll.

Single Drum, Endless Bed Sander

J. A. Fay & Egan Co., Cincinnati, Ohio, have just produced a new single drum, endless bed sander known as No. 493. It is an excellent machine for finishing narrow and short stock where the work would not justify the installation of the more expensive two or three-drum machine. In this way it reduces the cost of operation as it does not require as much to operate and uses less sandpaper and demands fewer adjustments. It will take up to 42 in. wide and 6 in. thick.

The bed which is heavily constructed, raises and lowers by means of large diameter screws. The feed consists of an endless chain of hardened steel links and rollers on which are mounted polished steel slats riding on individually oiled, machine ground, chilled iron ways. These slats are bolted to every other link of the chain and so made that they will not clog up with sand dust. Independent rubber cups, mounted in steel saucers, bolted to the slats, from the tractive power for carrying the stock through the machine. The bed is extended at both ends for convenience in piling up the stock for hopper feeding.

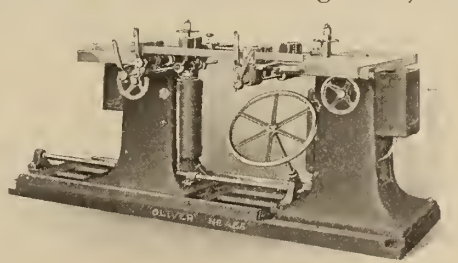
J. A. Fay & Egan Co's. No. 493 endless bed sander with gear covers removed to show the drive

The drum, which is constructed with a heavy steel shell, is ground to a perfect running balance and is covered with a non-stretchable combination rubber and felt billard table cloth. It is fitted with a device for quickly covering with sandpaper, positively gripping the ends giving the paper the proper tension and automatically taking up any stretch. The drum is provided with independent adjustment and means for lining up the bearings. A brush attachment is fitted immediately after the drum and is driven from the feed shaft. It starts and stops with the feed.

The machine is equipped with either belt drive or motor drive with the motor either coupled to the counter-shaft or directly to the drum.

Oliver Shaper has Unusual Features

In the Oliver No. 488 double spindle, adjustable centres shaper there are a number of features that are announced for the first time. In general, it is a ball

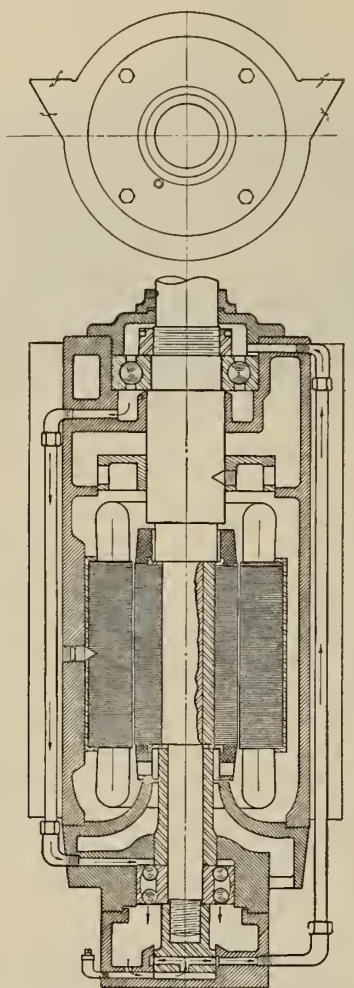


Double spindle, adjustable centres shaper

bearing shaper of the motor spindle type. The centres of the shapers are adjusted by a big hand wheel which moves one column down or away from the

other column. The work passes between the two spindles, parallel shaping resulting. The two operations are performed simultaneously. This makes it an excellent machine for drawer shaping, that is for shaping the two sides of a drawer at a single operation. In this way it might be compared with a double cut-off saw, which is a common machine in every furniture factory, except that instead of a saw working on both ends of a piece of wood at one time, the shaper cutters are working on both ends of the drawer or other piece that needs to be shaped parallel. The centres are adjustable from 15 in. to 54 in.

The mechanical features of this shaper are very interesting and are detailed in the sketch herewith. This shows the location of the ball bearings, indicate how



Sectional view of the spindle mounting

the motor is built directly on the spindle and also outlines the oiling system. The pump shown at the bottom forces the oil up the tube at the right as indicated by the arrows. The oil then flows into the top of and through the upper bearing and comes out of the bottom of this bearing down the tube shown at the left. In order to indicate to the operator that the oiling system is functioning at all times, there is a glass section in this tube at the left which permits the oil flow to be observed. From this tube the oil flows into and through the lower bearing back to the pump, thus completing the circuit. This particular feature, while now being announced for the first time, is a part of all Oliver shapers.

The manufacturers of this equipment are the Oliver Machinery Co., Grand Rapids, Mich.

Text Book on Shaper Practice

In"Modern Shaper Practice" is published what is believed to be the first book dealing exclusively with shaper work. It is a very profusely illustrated and practically written working guide and reference book on the care and operation of woodworking shapers. The author, W. H. Rohr, has amassed a very great fund of information not only through his experience as a practical shaperman but through his extensive contact with woodworking plants all over the continent, and as a result this book represents not the experiences and opinions of one man or even a dozen men, but is a digest of the experience and knowledge of hundreds of individuals and firms interested in and identified with the operation, use and manufacture of shapers, shaper cutters and shaper equipment.

The book, which comes in a most convenient size, offers a splendid means for shaper operators to improve their knowledge of the machines they operate, practically all of which knowledge ther have obtained, in most cases, from personal experience. Very rarely does a shaperman become familiar with the entire range of shaper operations. Often, therefore, he is unable to handle some of the problems that come up. For guidance and instruction in these unusual problems this book is very valuable. The contents are arranged in sixteen chapters, the headings of which, as follows, indicate the scope of the text:—Possibilities of the shaper; cutter, cutterheads and collars; shaper accessories; methods of operation; shaping with guides; how to start against collars; shaping stair crooks; shaping with outline patterns; shaping with forms; guide pins and pivots; unusual methods of shaping; miscellaneous shaper work; horizontal-spindle shapers; knife making; shaper bearings; power transmission.

"Modern Shaper Practice" is published by the Practical Books Co., Indianopolis, Ind., and sells at $3.00.

A Practical Book on "Chip Carving"

"'Chip Carving," by Harris W. Moore, supervisor of manual training in the public schools of Watertown, Mass., is a new book dealing with the art of chip carving and offering appropriate designs for nineteen different articles, such as glove box, blotter, pin tray, paper knife, etc. In addition to general information on tools and methods of working, specific directions for carving each article are given. Examples of primative carving are shown by photographs while the text indicates their adaptation to modern principles of design. The designs in the book are full size and hence can be traced and transferred to the model by carbon paper. The book, which sells at 85 cents, is published by the Manual Arts Press, Peoria, Ill.

Catalog of Oliver Portable Machinery

What really constitutes a catalogue of the portable woodworking machinery manufactured by the Oliver Machinery Co., Grand Rapids, Mich., has just been issued by that company. It is known as Bulletin No. 7. The portable machines which are illustrated and fully described in the publication include saw benches, band saws, jointers, sanders, wood trimmers, oilstone grinders, tool grinders, vises and glue heaters. In addition, a number of other supplies, such as saw guards, factory truck parts, shellac cans, etc., are listed.

Upholstering and Trimming

Method of Upholstering a Chaise Lounge

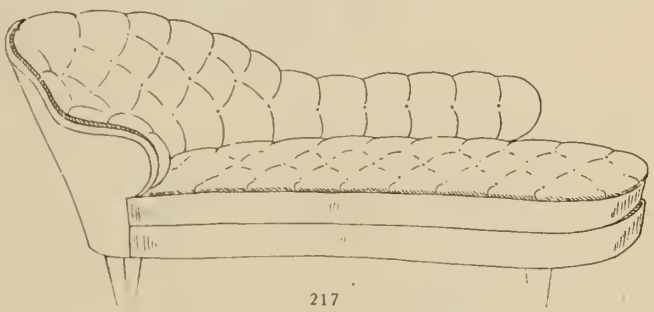
The Various Steps in Placing Springs, Stuffing and Covering—Different in Detail from the Piece Described in Last Issue

The upholstering of the chaise lounge shown in figures 217 and 217a is a little more difficult than the one described in connection with fig. 208 in the previous instalment of this series of articles taken from "The Upholsterer." Not only has this piece to be provided with a spring edge, but instead of the ordinary form of double banding the lower band on this piece is increased in width by the application of a nosing at the top of the frame.

This nosing is back-tacked on the upper edge of the frame, stuffed up to a height of 1½ inches and given a single stitching. A cross section showing the relation of the nosing to the frame and its spring edge is shown in fig. 218, the completed nosing being shown in fig. 219.

Fig. 219 also shows the placing of the springs and the wire edge, fig. 220 showing the springs covered with burlaps. A light double-stuffing is added over the spring burlaps with a single stitching on the edge bringing the seat to the condition shown in fig. 221. An enlarged detail of the stitched edge of the double stuffing and of the nosing above the frame is shown in fig. 222.

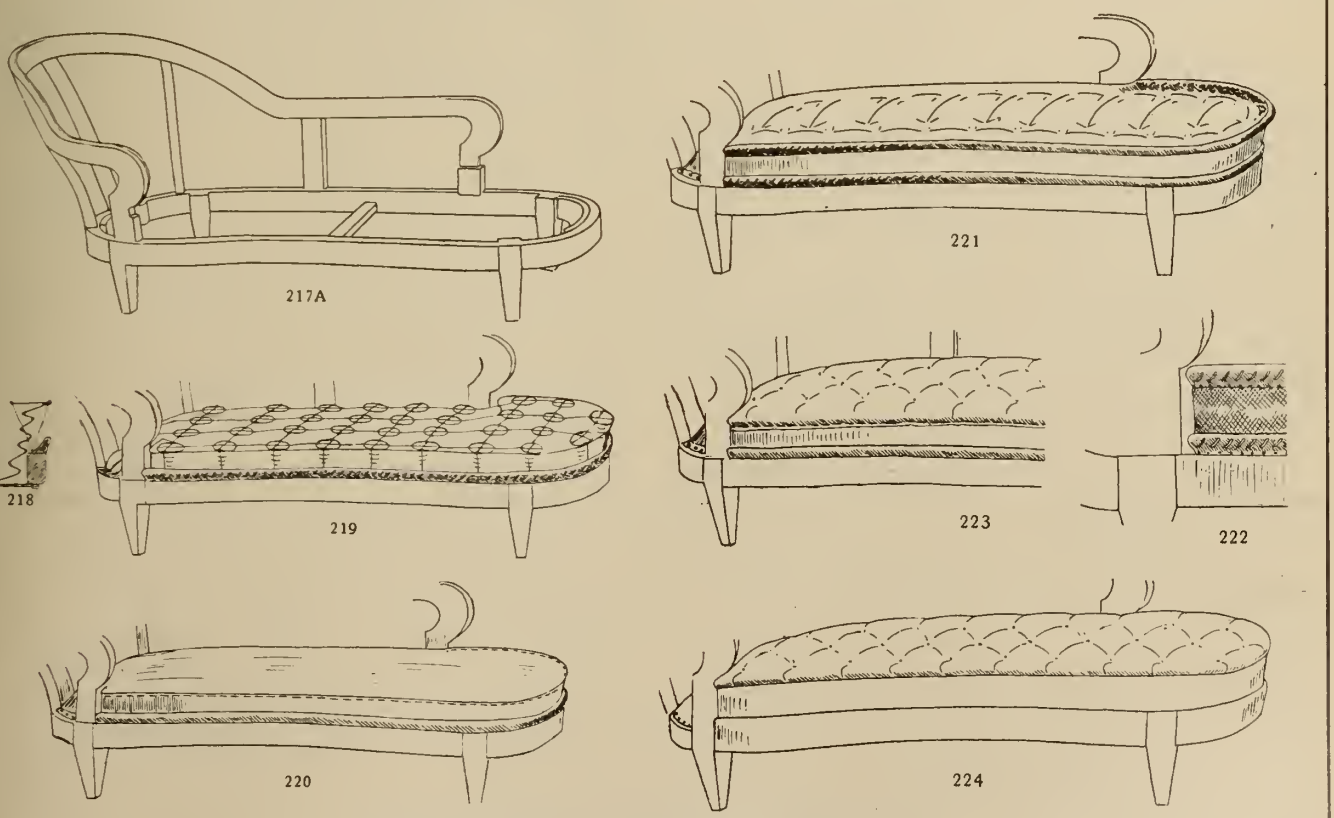
The burlaps of the double-stuffing is now marked



217

The piece described in this article

for tufting and from these marks and the dimensions of the seat, calculation is made for the construction of the down-proof bag which is to contain the down. Allow only about ½ inch extra each way for fullness between the tuft markings on the burlap. That is, if the tufting marks on the burlaps are 8 inches apart,



Sequence of operations in the upholstering of a chaise lounge

the corresponding marks on the down-proof bag should be 8½ inches apart.

The bag is filled with a light layer of down and the various tuft markings tufted into place as indicated on the marking of the seat. In this way the down bag is used only as a covering muslin. The ½ inch extra allowance for tufting does not permit of pleats, but the fullness will naturally fall into pleat-like semblance.

After the entire seat has been tufted as shown in fig. 223 the surplus is turned in around the edges and sewn down as indicated.

Two pieces of fabrics sufficient to form the two bands are back-tacked behind the nosing on the frame, one intended for the covering of the bottom band and the other to be carried up as a finish for the seat. Under each of these a light layer of wadding is placed in order that they may lie smoothly and without wrinkles, giving the smooth appearance shown in fig. 224.

Advising Purchasers on Care of Upholstering

The Members of the National Association of Upholstered Furniture Manufacturers Attach Booklet to Their Products Which Details How Coverings Should be Cared For

Montreal, Mar. 15, 1923.

Editor, Canadian Woodworker:

Customers of our firm who buy upholstered furniture, more especially of the expensive varieties, constantly ask us for information that will assist them in protecting their goods from the ravages of moths. Apparently these purchasers are quite alive to the necessity of taking precautions; in fact, we ourselves always explain to our customers that many an expensive suite has been ruined through the lack of proper treatment against moths. We are wondering if it would not be possible for manufacturers to attach to each upholstered piece they turn out a card or tag with suitable instructions for the guidance of the purchaser. We are sure that this would be a service that would be appreciated by them as well as by the retailers like ourselves.

Yours truly,
K. D. L. Co."

It is true that upholstered furniture is subject to insect attacks that in many cases have been the cause of the destruction of many expensive coverings. For that reason the suggestion contained in the above letter is worth considering; in fact, in the United States the National Association of Upholstered Furniture Manufacturers has arranged the issuing of a booklet in the manner suggested. This booklet is attached to the goods manufactured by member plants, being enclosed in an especially designed envelope which assures its reaching the ultimate purchaser. The instructions which are contained in this booklet are very interesting and important and are consequently reprinted below:

Brush Often

The first and most important rule to follow in caring for upholstered furniture is to brush it thoroughly at least twice each month, and to use the vacuum cleaner on it once each week.* This procedure will keep it clean and free from dust, and in addition it will practically eliminate any danger from moths.

There are three species of clothes moths that attack articles made of wool, fur, bristles, hair and feathers. Their life histories and control are so much alike that the separate species will not be discussed. They all pass through the usual life cycle of insects. That is, there is an adult or parent moth, the egg, the larva, or worm, and the pupa or chrysalis. From the pupa emerges the adult of the following generation.

The adult, or parent moth, is the miller which one sees flying about the house. The moths are especially abundant during the spring and late summer, although in heated houses they may be seen almost any time. They themselves cannot damage upholstered furniture, but they may lay many small white eggs on it. They may live as long as three weeks, and, during that time, lay as many as two hundred eggs each. These eggs hatch in about five to ten days, according to temperature. The tiny worms, or larvae, begin feeding as soon as they hatch and become full grown in not less than ten weeks, if conditions are favorable. The rapidity of growth of the larvae depends not only on favorable weather conditions but also upon the kind of material upon which they feed. While the adult moth does not eat cloth she should be killed whenever possible, for each female moth killed means so many less larvae to attack the goods later. It is the larvae that cause the destruction, for they have well developed jaws at birth.

Decreasing the Danger of Moth Ravages

It is not necessary to suffer loss from clothes moth attacks, as there are several methods of preventing damage. The first, and most simple, is to brush often, as the larvae and eggs are very delicate and a thorough brushing will either crush or remove them. In brushing, pay particular attention to seams and pockets, especially those in dark corners and against the wall. Remove the loose cushions and brush as deeply as possible in the space between the seat and the back and arms. Brushing, in combination with the thorough use of the vacuum cleaner, should serve to remove any danger of moth ravages.

In the event that larvae have hatched and begun their work of destruction, proceed as above outlined, and then spray the infested parts with a good insecticide. Secure one that is guaranteed not to harm fabric, wood or varnish, and use considerable of it. There are a few chemical compositions on the market, designed especially for moth treatment, that are very efficient if used in quantity. The danger in using them does not come from using too much, but too little.

Another effective method is the carbon disulphid treatment. This is a fumigating treatment, and

*Excepting on down-filled cushions.

should be carried out in a small room. If the home is equipped with a closet large enough to hold the furniture to be treated, so much the better, as closets usually have no openings other than one door. Place the furniture to be treated on the floor, as the gas which is formed as the carbon disulphid evaporates is heavier than air and hence goes down. The chemical can be secured from any druggist, and at least ten pounds are needed for every 1,000 cubic feet of space. The disulphid should be poured into a large, though shallow, dish, which has been placed at a convenient height above the furniture. After pouring leave the room immediately and seal up the cracks around the door as effectually as possible. Pasting strips of heavy wrapping paper over them is probably the best method. Allow the room to remain closed at least twelve hours, and then air it out. The unpleasant odor will not be long in leaving, and one has the assurance that every vestige of animal life has been eliminated.

Another protection against moths is the cold storage, the facilities of which are available in most large cities. Articles held at a temperature of 40 degrees F. are absolutely protected against damage while in storage. This treatment, of course, is expensive, and can only be recommended where very valuable pieces of furniture are involved. Very often owners of such articles leave them unprotected during the summer months, to return in the fall to find the larvae at work.

Effective as the treatments have become, it is always well to remember that "an ounce of prevention is worth a pound of cure," and to care for your furniture accordingly.

Cleaning

Although most covering materials used on upholstered furniture will not appear soiled for a number of years, the lighter ones especially will eventually need cleaning. This work can be turned over to an experienced dry cleaner, or it can be done at home if the house is equipped with an efficient vacuum cleaner. A cleaner of the stationary type is preferable to the portable machine as its suction power is much greater.

To clean the furniture, first remove the loose cushions and go over the entire piece with the vacuum cleaner, using the special tool which is furnished for that purpose. Shave one cake of neutral soap (this can be secured at any druggist's) in a quart of boiling water and allow it to thoroughly dissolve. Mixing a small amount of this solution with a little cold water, beat vigorously until a very thick and "dry" suds is obtained.

With a stiff bristle brush, scrub a small section of the fabric with this suds, working with a circular motion and covering a section not over eight inches in diameter. Use a quantity of suds to prevent uneven cleaning, and when the scrubbing is finished, scrape off as much of the lather as convenient and take up the balance with the vacuum cleaner.

Rinse the cleaned portion with a weak solution of salt water, applying the rinse with a soft sponge which has been squeezed until it is merely damp. In wiping a fabric with a long pile, such as velour or mohair, wipe with the nap of the goods to prevent forcing the bulk of the moisture into the fabric. Repeat this wiping until all of the soap has been removed, and run the vacuum cleaner over the damp portion to remove as much moisture as possible.

Continue this process over the entire piece and allow it to thoroughly dry before use.

Removing Stains

Although the foregoing method of cleaning will remove the bulk of the soiled portions, liquids are sometimes spilled, the removal of which will require more drastic methods. Great care should be exercised in this work, and the directions should be followed explicitly. Clean sponges, clean cloth or tufts of absorbent cotton should always be employed—gently, and with patience.

First brush the soiled part thoroughly to remove any superficial dirt. Apply the cleanser with a gentle, circular motion, extending from the rim to the center of the stain. Immediately apply a soft blotter to take up the surplus cleanser, and wash the spot with distilled water. The surplus water should be blotted up and the spot sponged with alcohol to prevent the formation of rings. With silks, it is well to apply a coating of talcum powder over the alcohol and permit it to dry thoroughly before removing.

Blood stains—Remove by soaking the spot repeatedly with chloroform, working in the open air, or peroxide of hydrogen. For thick goods, use a paste of raw starch and tepid water. Spread freely on the goods, removing when perfectly dry. On silk, use strong borax water.

Candy stains—Remove with cold distilled water, brushing or scraping carefully.

Coffee stains—Apply cold distilled water; then apply permanganate of potash solution from bottle; then immediately apply a mixture of one part of peroxide of hydrogen, one part acetic acid and two parts water. Keep saturating with the latter mixture until permanganate of potash and stain disappear.

Fruit Stains—Same as coffee stains.

Grease or oil stains—Apply gasoline or chloroform; allow same to soak in well, then place piece of blotting paper over stain, and pass slightly heated iron several times over. Or, sponge with carbon tetrachloride, rubbing with the nap of the goods. Continue until all traces of grease have disappeared.

Ink (writing) stains—Apply a solution of bioxolate of potash (two tablespoonfuls to half pint of water, dissolved by boiling and allowed to cool). Then apply water, to neutralize acid. If stain does not yield, apply permanganate of potash solution from bottle; then immediately apply a mixture of one part peroxide of hydrogen, one part acetic acid, and two parts water . Keep saturating with the latter mixture until permanganate of potash and stain disappear. If stain still remains, apply a few drops of carbolic acid and then wood alcohol.

Medicine stains—Dissolve with alcohol.

Paint or varnish stains—Sponge with carbon tetrachloride, rubbing with the nap of the goods. Continue until all traces of paint have disappeared.

Rust stains—Same as ink stains.

Soot stains—Saturate with ether and cover with a cup to prevent evaporation until the stain disappears.

Tar stains—Except on wash goods, use turpentine and rub with benzine. On wash goods, use lard

(Continued on page 98)

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Wood Finishing Difficulties

Often a Lot of Trouble in Staining, for which the Dyes are to Blame—The Proper Treatment of Birch and Red Gum

As long as there are changes being made in both materials and conditions of finishing, not only the filling, but the whole art and practice of wood-finishing must be considered as being in an experimental stage; I believe that most finishers will agree with this statement. It is the same in all lines of wood-decorating with paint, varnish, stains, etc. A few weeks ago I received a letter from a large advertising agency telling me that a client of theirs was contemplating establishing a department that would handle nothing but complaints of workmen using their products, in which the said complaints (which, by the way, were not against the quality of the goods, but in connection with their use) would have investigation by the expert of the department, and the result of the examination would be furnished to the customer, or any information on file would be given him, all in order to assist the workmen, and incidentally, of course, to promote sales. I myself have charge of one such, or similar bureau, and it is surprising, or would be to one not in the secret, how many of even the best workmen run across troubles in doing work that they are unable to handle, because unfamiliar with it.

Almost all trade papers receive and try to answer such problems as these. And there is not a workman, no matter how long-experienced he may be, but will now and then run against something in the way of a problem in work that he has never before met with, nor ever heard of. A great deal of the trouble met with in wood-finishing now may be attributed to the use of aniline dyes, for one thing. They are beautifully treacherous, if one may use such a term. Then the condition of wood now used (and we are finishing many different woods today that were not dreamed of when I went to the trade) is hardly always the best. As to the dye stains, every large manufacturer of wooden objects that have to be dyed and finished, saying nothing about the smaller manufacturers, has his troubles with them.

The Dye Often to Blame

I have received many objects of wood that have been finished and that exhibited blemishes of color that made them unsaleable and have been asked to give the cause and indicate a remedy, and always it was the dye that was found to blame. There is a fine humidor near me as I write, sent to me for examination of finish, with the wish that I might show them how its finish might be improved. I gave them the best information that was at my command, and whether it was sufficient or not I do not know, as I never heard from them again. It is likely that they will still have the same trouble as then, and will have unless they change from aniline dye to some vegetable or mineral stainer.

The wood of nearly all the small objejcts sent me for examination is birch, with a mahogany stain finish. It is true that many manufacturers do not finish the best way. They too often seek speed and cheapness, and this, of course, will not make for quality. Birch has a close grain, and may be made to imitate not only walnut, which it does handsomely, but also cherry and mahogany. For a dark mahogany finish, taking a dark birch wood, I first give it a coat of bichromate of potash in a weak water solution form. When this is dry it may be stained with a mixture of rose pink, Vandyke brown and burnt sienna, in such proportions as will give the wanted shade. After this stain is dry it is to be very lightly rubbed with fine sandpaper. Then apply a coat of thin shellac, tinted with Bismarck brown, which will give the shellac coating a more uniform coloring. If varnish-finished, let the last coat be rubbed with 0 or 00 pumice powder, using oil instead of water for the rubbing liquid.

Oil stain usually tends to obscure the grain of birch, and rose-lake is a very fugitive color, therefore it will fade out, sooner or later. Water stain is therefore recommended. It carries the stain deeper into the wood, nor does it rub through as oil stain does. However, there are those who still prefer the oil stain to the water, using burnt sienna, burnt umber and rose-lake, in certain proportions.

In case oil stain is used, and there is no doubt it being best for exterior work, let the stain dry, then rub the stained surface with fine sandpaper, following this with two coats of thin shellac varnish, each coat to be rubbed. Next apply a coat of varnish. When this coat is dry rub it with curled hair, which is safer than sandpaper, on account of the corners, that may easily be rubbed bare. Finally, give it a coat of varnish, which, when dry should be rubbed to a dull polish with flour pumice and oil. These directions are especially useful for the finishing of doors of birch. For outside doors the shellac serves the purpose of holding up the varnish, an important matter where the work is constantly under exposure to the weather.

Birch Often Difficult to Finish

No wood has had more complimentary words said in its praise than this birch, and yet it is, after all, not without fault. Finishers often call it a "treacherous" wood, as it exhibits certain faults under finishing that cause a great deal of loss and trouble. There seem to be salts of some kind that act upon the stain, and the result of which is not apparent at once, and may not show up for several months. I believe that it is this action that gave trouble to the makers of the humidor that I have alluded to. It affected that in spots, and only after some time succeeding the finishing. That the effects were spotty shows that the chemical salts

also must be in spots, and not generally diffused through the wood.

Red gum is another fine wood for mahoganizing, as it is called, but the color of the stain should be as near the color of real mahogany as possible. This color, as any one familiar with the wood knows, is salmon, rather than red. The wood has a fine figure, and staining it brings out all its natural beauty of form, and adds to that of its color. Another thing that can be said in its favor over real mahogany wood is that it is more durable and easier to work. Red gum can show equally as handsome a crotch as mahogany, while it is not as liable to check as mahogany crotch is. Walnut color does well on red gum, though a clear brown is better, in the judgment of some finishers. In this case the effect is not to be similar to walnut.—By A. Achmun Kelly in "Veneers," Indianapolis.

Causes of Some of Present Day Varnish Ills

Chief Reason Why Some Furniture Factories Do Not Get Good Results is Due to Failure to Observe Speed Limit

We have had speed and more speed, in fact, our very lives seem to be made up with the thought of speed, pep and "give her the gas." Fortunately, on the latter the government steps in and limits the amount of speed that one can pick up on the road in his machine, but not so with the great call for production.

In the old days, thirty days was very good for the finishing room but compare that with the present day results. If a manufacturer was told that it would take thirty days on an average to move his furniture through the finishing department, he would imagine himself broke on the next day. There are certain factories that have had a good deal to do with speed, the varnish kiln, the spraying machine, storage room, etc. In short, with the advent of the spraying machine, varnishes were built with a particular idea of having them applied by the use of the machine. The kiln also was considered.

Unfortunately, however, introduction of the latter has given people ideas of temperature and, more unfortunately, without the proper ventilating and moisture control systems. And probably the demand for speed was put up to the manufacturer of varnish, with the unsatisfactory results that some varnish finishes are showing today.

We cannot blame the varnish man, but we rather should blame the consumer who insists upon the almost impossible. True, a piece of goods can be made that will give an apparent satisfactory finish. Nothing but time could tell what the results would be. Enough, however, has manifested itself so that this article, written for varnish consumers, should act as a warning message and stand out prominently as a signpost along the road, "Speed limit."

Cannot Pass the Buck

Substitute shellacs are not used as much as they were, and you cannot pass the buck that way. Further, manufacturers of stain materials generally have made vast strides in the last five wears and know pretty well what their goods will deliver. The filler man and the shellac man know where they are at. We only have to refer to the present classifications placed on shellac to realize that these men intend to deliver the pure article and have seen to it that anything else cannot masquerade under the term "shellac." Enough has been said in the trade papers regarding this movement, and the consumer when purchasing shellac is thus protected. Other goods designed and sold with the idea of doing that which has always been attributed to pure shellac will have to use the word "Substitute" or something else. Manufacturers employing the conventional way of preparing their goods have now to look after their varnish consumption in a way that is just not only to themselves, but to the maker. We all know that varnish makers foolishly held the price during the war period. We realize their willingness to give us a varnish according to our own specifications. Most of these specifications carried with them an implied speed, which meant a cutting down of a slower drying component—their oils.

Some Pertinent Facts

H. C. Currier of the Drying Systems, Inc., gave out some pertinent facts in a recent article as follows:

"In most woodworking plants the article is coated rapidly and efficiently, then allowed to stand until evening in the finishing room, or an open dry room, and dried overnight. This delay causes work to pile up in various parts of the finishing room. It also allows the carefully applied finish to be damaged by dust, dirt, soot, insects and other foreign matter.

"In addition, the old method of overnight drying usually produces incorrect drying. Most grades of varnishes are now manufactured for use in a dry room. If exposed to from five to seven hours variable atmospheric drying the coating has obtained a decided surface-set. Then when it is exposed for from eight to twelve hours to the more rapid drying atmosphere of the dry room the surface becomes still further case-hardened and as a result the oxidation of the drying oils and gums takes place at a relatively slower rate.

"When once a siccative coating has obtained a decided surface-set it cannot be correctly dried in a dry room unless a sufficiently high relative humidity is carried to soften up the surface. Such an atmospheric condition will be very injurious to the other coated surfaces placed in the dry room the latter part of the after noon.

"This explains why the finishing room foreman is frequently puzzled as he thoughtfully fingers his coated pieces after an overnight drying. Often he finds that the piece which was coated the last thing in the afternoon is more satisfactorily dried than its neighbor, which he knows was coated early in the forenoon.

"The disadvantage of night drying can be easily eliminated by drying the article as soon as it is coated. This will make it possible to operate the drying room with two shifts and so speed up production."

There is an individuality about the requirements of varnish for each factory. The conditions are not alike. This pertains to every part of the manufacture of furniture. To the writer's mind there is not a more

important part than the finishing room, and I would suggest to the foreman in charge of that room that he acquaint himself as to the correctness of every move that is made from the raw board to the constructed piece it arrives to him.

Moisture Content Important

Particularly should he know the moisture content; he should know whether the wood has acquired that permanency which will see it through to its destiny. Wood too dry is just as dangerous as wood not sufficiently dry. One has but to read the recent reports on moisture content made by the Forest Products Laboratory to realize the importance of this factor. If the wood has not reached a staple condition it will assume different dimensions, especially during shipping or storing. The humidity and the temperature, play so great a part that although the wood is protected with its finish coat, one must remember that there are usually two sides to a board, and if the board is in a nasant state it is bound to absorb moisture, possibly later when brought into the dry room gives off this moisture, and thus we have expansion and contraction which will produce a movement of the wood or of the underlying coatings that will probably cause a loss of lustre and shrinking in the varnish coats.

That is only one way of expressing what speed will do when too much is incorporated in the varnish. The word "elastic" leaves us when speed is attained. In other words, in order to get speed into the varnish we take out that which gives elasticity, and then when the wood to which such a varnish is applied is subject to shipping conditions and storage conditions it cannot stand up under those conditions because it is like a piece of glass, and then when the most infinitesimal movement of the wood takes place the stain filler and shellac, the latter having been sanded to a surface, go with the wood and the line of separation manifests itself between their coat and that of the varnish in small crystaline abrasions which appear white on the surface.

What Mr. Currier Says

A few more pertinent remarks by Mr. Currier seem to apply to our discussion:

"A great source of trouble in plants manufacturing wooden products which must meet exacting demands lies in not keeping the humidity fairly constant throughout the plant. For example, the dry lumber may be stored in a room where the temperature is 60 degrees and the relative humidity 60 per cent. Under such conditions the moisture content of the lumber will tend to go up to 12 per cent. This lumber may then be taken into the shop and worked up at 70 degrees and a relative humidity of 48 per cent. As a result the moisture content of the lumber will fall, especially after it is cut up into smaller pieces, to about 9 per cent. Later the completed article may be put into the finishing room where the temperature is 80 degrees. This rise in temperature alone will lower the relative humidity of the shop air to 34 per cent and the lumber will dry out to about 6 per cent moisture. The finished product may then be stored in a room where the temperature is again 60 degrees and the relative humidity 60 per cent, with the result that the wooden parts will take on moisture and swell. When the article later appears in the store, office or home it may dry out, checks may form and glue joints may open up. In general, changes in moisture with small change of humidity take place slowly.

"The moisture content which wood has at the time of manufacture should correspond approximately to the average it will eventually attain in use, or slightly less. The humidity of the air surrounding the article in use should, therefore, govern the extent to which the lumber is dried. This is of particular importance to manufacturers of furniture, cabinets and other wooden products in which shrinking and swelling must be reduced to a minimum."

Thus we will see that much of our varnish ills are under our own control. We have endeavored to point out the danger. A danger of this kind is constant. We all realize that little difficulties will arise. One might say that water in the spray system caused from condensation will do the same thing, but it is not general. The thought is to have the varnish consumer lend an ear to the warning, and to strengthen the mind of the manufacturer with his determination not to accede to time limits on drying of their goods.

A foreman finisher can keep an easy check on his materials by continually running panels through the factory employing the materials in daily use and retaining these panels for reference. A correct record of every operation, the source and kind of materials employed, and then subject these to the same conditions that he expects his finished products to receive. In summer months he can put his panels into a basement and then into an icebox and then back to the factory. This will enable him to thoroughly know what the finish that he is turning out day after day and month after month will endure.—From "The Furniture Manufacturer and Artisan.

Varnish Hints

No varnish is intended to stand too much exposure to the elements. The best will disintegrate quickly if exposed continually to water, but a good spar varnish or coach varnish will withstand a great amount of exposure without showing signs of wearing off.

The best spar varnish used on the decks of boats will not show white spots even when rained upon. Nothing but varnish of this nature should be used on piazza floors, ceilings and porch columns. If cheaper interior varnish is used for this work the result will de disastrous.

Architects will specify the best spar or coach varnish for exterior work, or, at least, some well-known varnish that has been prepared for exposed work; but in many instances householders who do not employ an architect leave the specifications to the builder or painter. For the sake of one's reputation all such work should be done in a workmanlike manner with the best of varnishes, because one good job breeds a dozen new ones, while one bad job lessens one's chance of securing more work of this character. Honesty pays in the long run, and it is short-sighted economy which induces a painter to skimp on materials or use inferior grades.

The Use of Fillers

In open-grain wood a good varnished surface cannot be obtained without first using a good wood filler to close up the open pores and cracks. The filler, if properly applied, forms a foundation for the varnish, and if the foundation is not right, the finishing process can never be made satisfactory. A good

many poor jobs owe their results to the lack of this. The wood filler must be rubbed well in and across the grain so that an even surface is obtained.

On the other hand, while most of the hard woods do not need a paste filler to give a uniform foundation, they do need a coat of shellac first. Apply it evenly, and rub in if necessary. Sometimes better results are obtained by applying the shellac, and, after it has dried, sandpapering it down.

It need hardly be stated that two good coats of thin varnish are better than one thick one, or, for that matter, two thick ones. A common mistake made in applying varnish on new wood is to give a thick coat at first on the mistaken assumption that the wood will absorb most of the surplus. No greater mistake could be made. The first coat should be spread thinly and uniformly, so that the surface is all coated evenly. Let this coat dry thoroughly and completely before the second coat is put on. If the second coat is applied before the first has dried thoroughly, the job will never turn out as it should.

Some painters will apply a coat of varnish and give it twenty-four hours in which to dry. Usually that is sufficient, but weather conditions must be taken into consideration. Cold weather, wet weather, and even foggy weather, will interfere with the proper drying of varnish, and when applied in such weather it will take forty-eight hours and longer for the first coat to dry properly.

Varnish dries the quickest and most evenly in a uniform ventilation. In a dark room without ventilation it will take twice as long to dry.

Driers Not Recommended

The application of driers to the varnish is not to be recommended except in special cases. One may in this way hurry through a job, but invariably the driers leave the varnished surface dry and brittle so that it will chip off easily. Ridgy, streaked and lumpy varnished surfaces are usually due to heavy applications of varnish, or to the work of varnishing with the second coat before the first is thoroughly dry. No amount of rubbing and sandpapering down can quite make up for botchy work of this character.

Varnished wood surfaces are always objects of beauty. The varnish brings out the beautiful grain of the wood, and anything that spoils the grain or produces an uneven surface should be avoided.

A properly varnished surface will last a long time, and it can be renewed without much trouble or expense; but if the first treatment is wrong, the wood is for ever ruined unless all the old varnish is removed and the work done again from the beginning.

DeVilbiss Mfg. Co. are Building Million Dollar Plant

Ground has been broken for the construction of a new plant unit for the DeVilbiss Mfg. Co., Toledo, Ohio, makers of the widely used DeVilbiss spray-painting system, which will call for an expenditure of $1,000,000, including equipment.

This new unit will be of fireproof brick and concrete construction, four stories high and will be 580 feet long by 80 feet deep. The structure is the first of two similar buildings to be constructed on the company's 55 acre factory plot to afford more adequate plant room and improved production facilities for the rapid and substantial expansion of the business. The completion of this first unit will also enable the DeVilbiss concern to effect a more efficient grouping and consolidation of the several manufacturing divisions of the business, now located at various points in the city.

Among other special appointments, rest rooms and a cafeteria will be provided in the new building, while on the site tennis courts, baseball diamonds and other recreational features will be maintained.

The DeVilbiss Company expects to occupy the new building within six months.

Polychrome

Those who follow how things are done in the various lines of finishing have witnessed the introduction of polychrome into the furniture field. It is sad to relate that most of it has gone as quickly as it came. It sprang into prominence over night so to speak and was accepted by the trade in the same manner. Those responsible for its introduction carried out the idea of polychrome furniture in every detail and it is a pleasure to relate that these few exceptional lines are just as popular today as they were upon their inception. Polychrome in its many variations was a rather poor excuse of the idea of actual polychrome. The putting on of a daub of green, blue or red here and there is the very thing that caused the downfall of the so-called polychrome finishes. Another big trouble was the fact that everybody had individual ideas as to what really constituted a polychrome finish, coupled with the fact that the designs in many cases were really not of the sort that would lend themselves to the proper polychrome effects.

The general idea of the polychrome should in all cases carry the underlying coat of bronze or gold. The manufacturer must learn that simply bronzing will not do. He must use burnishing powders and in many cases actually do burnishing (method given later) so as to produce that simple elegance which is primarily demanded by a decorative piece such as a lamp. Continuing to describe the effects that are desirable let us say that a fluted or twisted—say a Jacobean turned stick—when polychromed, can carry the antique effect of broken metal if the gold remains continuous. That would give the appearance as though the outer decoration had become crackled from age and then still have an absolutely smooth surface so that dust and wear will not show; yet the effect is permanent. In short, new ideas have got to be carried out and when so with a little bit more pains taking care. Now the crackled effect referred to is produced on the burnishing gold as follows: The gold is coated with a short japan thinned, brownish black pigment. As this is setting, there is pressed into it the crackled effect by taking a piece of stiff paper, folding it or rather crushing it down so that when the folds are pressed against the drying pigment, it squeezes this pigment up into the fold, producing lines such as one would expect to find in a badly crazed or checked varnish surface. A spider web effect but much coarser. When this is dry, wood lacquer is sprayed thereon to protect it and if necessary smooth down the effect.

A Manchester firm are inquiring for planed maple flooring. Prices must be c.i.f. Manchester. For particulars communicate with the editor. Refer to inquiry 1485.

Styles of Lamps

Speaking of styles, the lamp of the extraordinary type for table or stand will find a ready market. Lamps from 24 inches to 28 inches in height with a design so proportioned that the large shade will not seem top heavy will find a place done in polychrome. Speaking of polychrome in this connection, we do not wish to imply a wood finished lamp and decorated with polychrome but a polychrome effect throughout done on stippled surface—the stipple so as to avoid the dust catching article. While we admit that polychrome as a whole depicits some things of centuries ago, yet the present day house owner is not looking for something that will produce an old and dusty piece in her home from the simple reason that dust collects on her present day furniture. In all cases then the polychrome effects should be produced so that they will maintain their original appearance throughout and can be cared for as any other piece of decorated furniture.

Cuba Wood-working Factory

The Compania Orental de Muebles (Oriente Furniture Co.), an important woodworking establishment in Santiago de Cuba, was recently opened. This factory has a floor space of 47,900 square feet and consists of three storeys, not including offices and hardware storeroom. The machinery thus far installed includes lathes, planers, saws of various types, log mill, molding and mortising machines, etc.

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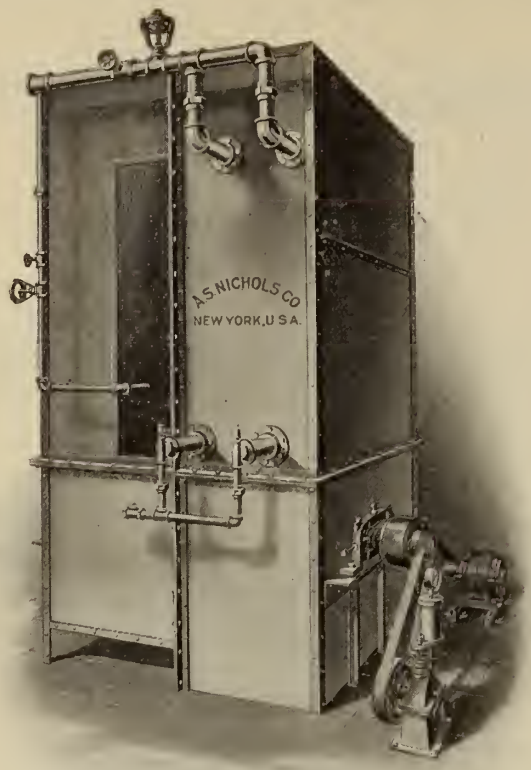

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Veneers and Panels

Walnut Butts Require Very Careful Handling

Present Conditions Have Necessitated the Use of Butt Stock in the Treatment of Which Especial Care Has to be Exercised

By ONLOOKER

Not so many years ago piano makers produced two dozen mahogany pianos for every half dozen walnut pianos, or approximately in that proportion. The next development was in favor of oak, but the demand for oak never ousted mahogany altogether. About the highest production that oak ever accomplished was fifty-fifty with mahogany. These figures are easily arrived at because in most piano factories the cases are put through in batches of twenty-four or forty-eight.

About fifteen years ago mahogany was the leader. In a batch of twenty-four cases there would invariably be eighteen mahogany and six walnut. Sometimes the entire batch would be mahogany because a tally of all the pianos in process of manufacture might show that the stock of walnut was accumulating. At that time oak was about the rarest thing known in the piano industry. The writer does remember a couple of oak cases being put through the plant about fifteen or twenty years ago in golden oak finish, but they were regarded by the men in the factory as monstrosities.

The Change in Styles

Some years later mission oak made its debut, and then the usual division of a batch of twenty-four cases would be, twelve mahogany, six walnut and six oak. The mission finish, however, did not make much of a hit with the public, but was followed by fumed oak, which held the public fancy for quite a number of years. Oak pianos are still made, but in very small numbers, at least in the plants that I come in contact with. In the days of its extreme popularity oak never, except on rare occasions, was in great enough demand to warrant a production of more than twelve cases in a batch of twenty-four. The make-up would be, usually, twelve oak, six mahogany and six walnut, but more often than not the batches were composed of twelve oak and twelve mahogany.

It is interesting to compare these figures with those prevailing today. The situation is almost the reverse of what it was fifteen years ago. It occurred to me recently to make some inquiries on the subject, which I did of several piano manufacturers, and the information I obtained was that out of a batch of twenty-four cases now the general division is eighteen walnut and six mahogany. Occasionally a few oak cases are included, but these are in very little demand.

This situation is rather surprising when we remember that ten or fifteen years ago it was common talk that the old walnut suites of furniture of our ancestors' days were impossible to duplicate on account of the lack of walnut in the country. This was common talk in the woodworking industry right up until the great war started such a demand for walnut for guns. Evidently no one realized how much walnut was available until that time. The production of walnut furniture, pianos, phonographs and numerous other articles since that time has been enormous so that whoever was responsible for the former theory that walnut was a scarce commodity must have been misinformed, to say the least.

The Use of Butt Stock is a Necessity

The demand for walnut shows no abatement. The piano industry is demanding figured walnut, and in order to get the figure they must have, it is necessary for piano manufacturers to use what are known in the trade as "buts," or walnut that is butt jointed to secure the required length for fronts of cases, etc. These butts are nothing more or less than the stumps of the trees. Our ancestors did not value the wood quite so highly as we do—they didn't need to because there was lots of it—and consequently they sometimes cut the trees at a considerable distance above the ground, leaving good sized stumps.

The figure in most of these stumps, or butts, is particularly handsome, the greatest amount of figure nearly always appearing at one end. Excellent effects are obtained by butt jointing two of these short pieces of veneer with the figured ends together, but the man who does the matching and jointing of this kind of stock must be a very skilled mechanic or the results obtained will be disappointing.

There is nothing new about jointing up butt stock. Any veneer man who has been working at the trade a number of years will have jointed lots of it, but during the past years when walnut was not so popular new men have broken into the business and for that reason a discussion of the methods of handling this class of stock may be timely. Some of it is quite contrary stuff to handle and an amateur could certainly do some damage.

It is to be hoped, for the benefit of the veneer room men, that the man entrusted with the buying of the veneer is experienced. If not he has a chance to mess things up rather badly. No purchasing agent should attempt to buy butt joint stock without having a practical man go over the samples with him.

Endwood is Troublesome

The first thing to watch for, after carefully deciding if the figure of the wood is suitable for the work to be veneered, is to see that the butts are long enough to double up to make the necessary length. And this is just where one of the most dangerous pitfalls for the inexperienced buyers asserts itself. Sometimes, in order to give length to a butt, some endwood is left on; that it, short grained stuff that

crumbles in your hand, or that almost splits and checks when you look at it. This endwood must be trimmed off before the butt joint is made. Therefore, be careful to see that the stock will be long enough for your purpose after allowing for trimming it off.

It is an impossibility almost to make a joint with this endwood left on because it crumbles off when you plane the joint, or when the stock is run through the veneer jointer, but there are skilled veneer men who can handle it with an exceptionally sharp jointing plane and make a joint. After the joint is made they glue cheese cloth or put adhesive paper on the endwood to keep it from breaking until it has been laid on the corestock. I say there are some men who can handle it in this way when they are forced to, but it is not advisable to ask them to use such material because trouble will certainly develop afterwards. The veneer will check and make a very unsightly piece of work.

When the veneer matcher proceeds to cut up a butt it should be all made up at the one time. It is bad policy to use part of it and then put the balance back on the shelf to use later. It is human nature to pick out the best of it the first time and leave all the plain wood for the next job. The best figure in butt logs appears in the centre, and it gradually "peters out" towards each side. Now in almost any class of goods that the stock may be used for there are parts where plainer wood may be used.

We will take a piano case as an example. The very best figured stock should be reserved for the front of the case. The ends, which are not so prominently before the eyes of a person examining the instrument, may be a trifle plainer than the front. Then there are small parts which do not call for the best figure. This is where the artistic sense of the man matching up the stock has full scope. Some writers on the subject of matching veneers have claimed that a man must be a bit of an artist as well as a mechanic. If a man must be an artist to distinguish between a plain or well figured piece of veneer, then I suppose they are right, but I think if the veneer matcher has common sense he will get by. There are very few men who ever attain the status of mechanics without learning to put the best work in the most conspicuous place.

Determine Beforehand What a Butt Will Do

The first step in matching or cutting up a butt, therefore, should be to figure out how many cases you can get out of it. This can be done by calculating the number of square feet required from the stock bill. When this point has been decided the next step should be to turn the log over sheet by sheet and number them consecutively as they lie in the log. Then proceed to pick out your best figured stock for fronts, etc., and so on until you see how you are going to come out. If you find you have over estimated the number of cases the log will make, you can put the stock back as it was originally and start the progress of laying out again, with a reduced number of square feet the log contains on the samples which were left by the salesman when he sold the goods.

These sample sheets carried by the traveller are the guides the buyer has in determining the quality of the stock, its figure, its length, and whether it contains endwood. It is possible to get stung in buying from samples, but not when dealing with a reliable house. One of the points the purchasing agent should be careful about is bargains in veneer. If a traveller for an unknown firm comes around with bargains, extreme care should be taken in dealing with his offerings. It occurs sometimes that a sample from each side of a log and one from the middle does not give a correct impression of the figure of the wood.

I have seen many logs that had a few well-figured sheets in the centre, with practically the entire balance of the log utterly devoid of figure. When dealing with a reliable house the salesman would give you a straightforward answer as to what proportion of the log was figured, and generally he will tell you frankly whether he considers it suitable for your class of work. Salesmen soon learn just about what class of stock you buy, and are in a position to advise you.

Desirable to Joint up in Wide Sheets

In matching up the veneer and jointing it is a good plan to joint up the stock in wide sheets and rip it afterwards for the narrow parts. It simplifies the handling to do it in this way both in the veneer jointer and the taping machine. It is also a little more convenient to joint in wide pieces even when the jointing is done on the bench with a jointing plane.

A re-drier is almost an essential piece of equipment where butt joint walnut stock is being used. This class of material almost more than any other, with the possible exception of crotch mahogany, requires to be perfectly flat in order that perfect joints may be made, and no other kind of joints than perfect ones can be allowed to pass on butt joint work. The joints being across the grain are much more conspicuous than the ordinary made lengthwise of the stock. Furthermore, these butt joints come right in the centre of the stock, and if they are at all noticeable they spoil the whole effect of the work. There is no use buying expensive veneer if the joints are not going to be properly made, and the way to see that they are próperly made is to see that the veneer is thoroughly re-dried and that it is made perfectly flat in the process.

The Use of Cauls

There is no way in which this can be accomplished so effectively as in a plate re-drier. In some small shops where they have not sufficient work to justify the installation of a re-drier they do the drying by placing the veneers between hot cauls, but great care has to be observed to avoid splitting the ends of the stock during the drying process. The best cauls for this purpose, are of basswood because they will absorb a great deal of moisture without the cauls being injured. If poplar or almost any other kind of wood is used the joints will come apart with the constant heating and absorption of moisture, because the veneers must be dampened before they are placed in the cauls in order to flatten them out properly. The cauls are obliged to take up that moisture and then when they are placed in the heater to be heated for the next batch of veneers all the moisture is removed. It has been found, therefore, that basswood cauls are about the only kind that will stand up to the continual swelling and contraction, they having some of the properties of a blotter.

The next point that has to be observed in drying between cauls is not to place too much weight on the top. Otherwise, the veneers are held so tightly there is no room for them to do their shrinking, and the re-

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(When writing mention Canadian Woodworker)

sult is they will split. There is a method or repairing these split veneers, by continuing the splits the full length of the stock and jointing, but it makes an unsatisfactory job at best. It is much better to install a plate re-drier. Small ones for the small shop are now obtainable, and the peculiar breathing movement caused by the opening and closing of the heated plates produces an ideal job.

Proper Glue Room Practice

Good Glue and Experienced Men are Essential Requisites for High Quality Work—The Right Conditions for Glue Using

To get good work from the glue room it is necessary to have a good grade of glue in the first place, and in the second place have a good man, one who understands his business, to look after its preparation and use. All too frequently the cause of failure in the glue room is to be found in its unbalanced condition. If a glue room is supplied with the best grade of glue obtainable, but is weak in intelligence, the weaker spot is the one that will determine the quality of the work done. The same thing applies where conditions are reversed. The best glue man available cannot produce a dependable article with a poor grade of glue.

Only experienced men should be intrusted with the preparation and use of glue, but the most capable man today was not always so. What he knows he had to learn by degrees, here a little, there a little, sometimes by reading, at other times through hearing, and many, many times through mistakes which either he or some one else made. Reading and experimenting are the sure and safe stepping stones to a knowledge of glue and its use in making dependable plywood.

Although cold-water glues have come rapidly into favor for veneering, there is yet and will be for a long time to come, a great deal of animal glue used for this purpose, and it is of this glue that we wish chiefly to speak.

Soaking of the Glue

The preparation of glue for use is the first and most important thing that one has to learn, and about the first question that would be asked is: Should the glue be soaked before heating, and, if so, should it be soaked in warm or cold water? There is a difference of opinion among experienced glue men as to the value of soaking glue before dissolving, especially since the advent of the modern glue-dissolver, but I favor the practice. It may be that I am a little too conservative in this respect and may change my views on the subject in the years that are to come. As yet, however, I have not seen nor read anything to convince me that soaking has not some advantage. Cold water should always be used for the purpose, and the soaking done in a cool place. This does not mean that the temperature at any time should be allowed to drop to the freezing point; on the contrary this should never happen.

Some persons do the soaking in a cupboard, built on the principle of a refrigerator, and kept cool with ice, where that is plentiful and cheap; others fit the cupboard with coils of pipe through which cold water is kept running. These coils form shelves on which the soaking pans are placed. Where a considerable quantity of water is used in the plant it may be permitted to run through these pipes before its final disposition without any waste. Glue should be put to soak the evening before it is required for use, and not more than enough for the following day's use should be put to soak at one time. Better to be a little short of the day's requirements and have to set a new lot during the day than have some left over, although what is left over, if kept cool, will suffer no serious harm.

Heat Conditions

The next question naturally refers to the temperature at which glue should be dissolved. A few still have the opinion that it should be "cooked" at boiling point, but the number of such persons is gradually decreasing. With the light we now have on the subject, a temperature of about 140-degs. F. seems about right, certainly not higher than 160-deg. F., and it is not well to keep it at even that temperature for any great length of time, because under prolonged heat it gradually loses its strength. How of the wood to atmospheric changes keeps up a con- a pot of glue early in the morning and keep it at a high temperature throughout the whole day, and perhaps the day following add a little water and heat it up again, and keep on doing this until the glue is all used.

Glue thus treated cannot make a durable joint, and that kind of treatment is often the cause of joints opening under some slight strain. Glue joints are always subject to more or less strain. The response of the wood to atmospheric changes keeys up a continual strain on the joints, and the amount of resistance offered depends on the strength of the glue. We may use the best quality of glue and dry the wood thoroughly, but if the glue is not treated so as to conserve its strength, our efforts in these other directions will be of very little use. The number of queries that come to this journal regarding the cause of open joints, after every possible effort has apparently been made to make a durable joint, proves the truth of my contention.

Glue should be prepared in small quantities. If I were asked how long glue should be prepared in advance of requirements I would answer: No longer than is absolutely necessary. I see no good reason why at least three batches should not be prepared each day where glue is continually used, and four would be even better. This can be done easily where the glue has previously been properly soaked.

Good Glue is Necessary

No matter how experienced the glue-mixer, he cannot produce a solution that will make a durable joint unless he has a good grade of glue to start with. It is desirable, therefore, that the glue-mixer have some knowledge of testing glues. We do not wish to say anything tending to discount the advantage of buying glue from a reliable house, but no matter how reliable the concern from which the glue is obtained, it is not wise to depend wholly upon it, because mistakes are liable to happen with any one at any time. A thorough test can be made only by a skilled analyst with modern apparatus, but there are tests with which every glue-mixer should become familiar and which can be made when the glue is in the dry state.

A good grade of glue should not readily absorb moisture from the air. Whether it does or not may be determined by its condition in a moderately humid

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

SAVE FREIGHT

Rotary Cut Birch and Gum

Why pay freight on gum veneers from southern points when our cutting mill is so near the border.

PANELS

We manufacture Tops, Fronts and Panels of all kinds

Ask for our "Ready to Ship" Stock List

MOHAWK VENEER CO., INC.

Warren, Pa.

Plywood Dept. Warren, Pa.

Cutting Mill Salisbury Center, N.Y.

HOFFMAN BROS. CO.

ESTABLISHED 1867 INCORPORATED 1904

Rotary Cut Veneer

at our Burnside, Ky., Mill.

Ready for Immediate Shipment

1 Car 1/20' Red Oak (log run)
½ Car 1/16' Red Oak (log run)
½ Car 1/20' White Oak (log run)
½ Car 1/16' White Oak (log run)
1 Car 1/28' Walnut (half round)
25M 1/28' Poplar Crossbanding
5 Cars 1/8' Poplar (log run)
2 Cars 1/8' Poplar (corestock)

Prices by wire on receipt of your inquiry

HB

Reg. U.S. Pat. Off.

FORT WAYNE, IND.

Exclusive Manufacturers American Walnut Lumber and Veneers

IT is generally conceded that this will be a bigger year than ever for Walnut Furniture and Interior Trim, and we are ready to supply the demand.

Your co-operation in early placing of orders will be of material assistance in helping to avoid an abnormally strong market which always reacts in higher prices.

We do not wish to see higher prices. Co-operation is the life of business at any time. At this time particularly you will find us as producers ready to co-operate in every way possible with consumers to ensure a steady supply of Walnut equal to the demand.

May we know your requirements early?

Penrod Walnut and Veneer Co.

KANSAS CITY, MO.

Branch Sales Office in charge of George C. Hall, 610 South Michigan Blvd., Chicago, Ill.
Branch Sales Office in charge of W. R. Thompson, 318 Mead Building Rockford, Illinois

Branch Sales Office in charge of C. A. Rugg, 110 West Second St., Jamestown, N.Y.
Branch Sales Office in charge of E. V. Williams, 1219 Harrison Ave., Cincinnati, Ohio.

atmosphere. If it becomes sticky in a human atmosphere, it indicates adulteration, usually with some saccharine matter, and its strength is reduced to the extent of such adulteration. The same may be said of ground glue that becomes lumpy in the humid atmosphere of summer-time. Sugar will lump in a warm, humid atmosphere, and it is the presence of this ingredient as an adulterant in the glue that causes it to cake. It is found more frequently in ground glue that in the cake, and because ground glue is more easily adulterated it should be tested with considerable care, and every indication of adulteration watched for, not only when it is dry, but also when in solution.

Glue that is highly adulterated will decompose while in the dry state—that is, before it is dissolved. Decomposition sets in because of the moisture absorbed by the adulterant.

To test ground glue for adulteration, take samples from different parts of the package, as the adulterant may not be mixed through uniformly. If one takes from the top of the package only, he is not likely to get a real test of the actual quality of the article. Test each sample separately. If white bubbles appear on the top of the glue solution it would be well to avoid using it, for they indicate decomposition.

A simple test for decomposition is to hold a small quantity tightly in the hand until it becomes warm. If it then gives off a bad odor, it is an indication of decomposition. Another test is to make a very thin glue solution with water that has been previously boiled and allowed to cool to a temperature of 100-degs. F. Keep the solution at that temperature for about two days, and if it does not develop a bad odor it may be considered free from decomposition, but if a bad odor emanates from the solution, discard the whole stock from which the sample was taken.

Errors in Judging Glue

There are those who believe that a dark color is an evidence of inferiority in glue, but such is not the case, because many dark glues are of excellent quality. Others believe that if glue cakes are twisted it indicates poor quality; that, too, is an error, because the shape of the cake has nothing to do with the quality. Others, again, have the idea that a glue cake with a high gloss must be of good quality, but that does not always follow, because a high polish is frequently found on glues of very poor quality. Some persons believe that because the first run of glue from the glue stock is the best glue and lighter in color than succeeding runs, a light-colored glue is one of good quality. But dark glues are often clarified by a chemical process which greatly reduces their strength, hence it is that dark glues are frequently found to be stronger than the paler ones.

A fair way to test glue for strength is to bend a sheet in the hand. If it bends but little and snaps readily and evenly, it should be avoided, as it is brittle and weak. Of course, atmospheric conditions must be a consideration when making this test, because a warm, humid atmosphere would enable a low-grade glue to bend readily without breaking. It would be better to make the test when atmospheric conditions are more favorable for a true indication of the actual quality of the glue.

Glue should be tested in solution for foam before being used. Make a solution and agitate it vigorously with a stick or an egg-beater. The fact that it will foam is of less consequence than the duration of the foam after the agitation has ceased. If it subsides readily there is no indication of inferiority on that score, but if it remains for a considerable time the stock from which it was taken should be rejected.

I cannot close this article without saying something about the glue room and the importance of keeping everything about it clean and sweet, if best results are to be obtained. A great deal of injury is done to good glue through neglect in keeping utensils and machines thoroughly clean. Not only that, but a clean room is a much more pleasant place in which to work and each workman should take a pride in keeping it so. Each night all the utensils should be sterilized with scalding water or steam, and at least once a week all machines that have glue on them should be sterilized with a steam jet, or scalding water. Keep the glue room clean and well ventilated. It will be better for the glue and better for the health and contentment of the men who spend their time therein.—R. B. Curtice in "Veneers," Indianapolis.

Uses of Basswood

Basswood enters very largely into the manufacture of musical instruments, chiefly pianos and organs. It is used mainly for interior small parts, for which its light weight and ability to hold its shape make is suitable. It is also much used for piano and organ cases. For organ bellows, wind chests, and swell boxes it is especially suited, because of its lightness, good working qualities, and freedom from warping. Basswood is the choice wood for piano and organ keys because of its whiteness, light weight, and good staying qualities. Only the highest grade of the wood, however, serves as piano-key stock. This is selected white wood which is seasoned with much care, since a small amount of warping in the key may interfere with its action.

Basswood also goes into the construction of phonograph cabinets, in the form of cores for the panels finished in mahogany, walnut, and oak veneers. Stock of small dimensions can often be utilized in this way.

Basswood is an important wood in the manufacture of store, office, and bank fixtures and is also used for church and school fruniture, such as pews, altars, and desks. It goes mainly into the interior and hidden parts, where it is used principally in the form of small pieces. It is valued for such parts because it is a good wood to work with tools and takes nails and screws well. It also serves for the cores of high-grade panels covered with veneer of figured wood. In this class of products, as in furniture, much of it is used for drawers, linings, and partitions. and it is well adapted for cases and racks for holding and displaying goods in stores as well as for medicine cabinets and cupboards in dwellings.

Inquiry for Plywood and Building Board

A London company are open to consider offers from Canadian manufacturers of building board. fibreware, and plywood. For particulars write the editor. Refer to inquiry No. 1478.

Inquiry for Hardwoods

A Manchester firm would consider offers of hardwoods, particularly birch, 1½-inch wide upwards. Further information in possession of the editor. Refer to inquiry No. 1484.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

"Established 1884"

GUELPH PATENT CASK CO. Ltd.

Scotstown, Que.

Our season's stock of veneer logs, 2,250,000 ft. of Birch, Maple, Basswood, Ash and Elm, is now delivered in our yard, and we have added a 102" lathe to our equipment, consequently are in a better position to meet the requirements of the Canadian trade, both in single veneers and plywood, than heretofore.

All our panels are built with casein waterproof glue. We have increased our Warehouse capacity to carry our customers throughout the year.

Ontario Representative:

Frank Moss P. O. Box 356, Toronto

Buyers of Veneers and Panels

will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

VENEER MANUFACTURERS COMPANY

Importers *Manufacturers*

MAHOGANY
LONG WALNUT
BUTTS

Mottled
Stripe
Crossfire

Beautiful Matching Possibilities

Rotary Cut, Sliced and Sawn Plain Woods

PLYWOOD PANELS FOR EVERY PURPOSE

The Largest and Best Equipped Veneer Warehouse in Chicago.

Prompt Shipments

1036 West 37th Street, CHICAGO, U.S.A.

Branch Sales-Offices & Show Rooms:

NEW YORK-709 Sixth Ave. (at Forty-First St.)
CHICAGO-28 East Jackson B'l'v'd
JAMESTOWN, N.York
HIGH POINT, N.C.

Quality VENEERS *in*

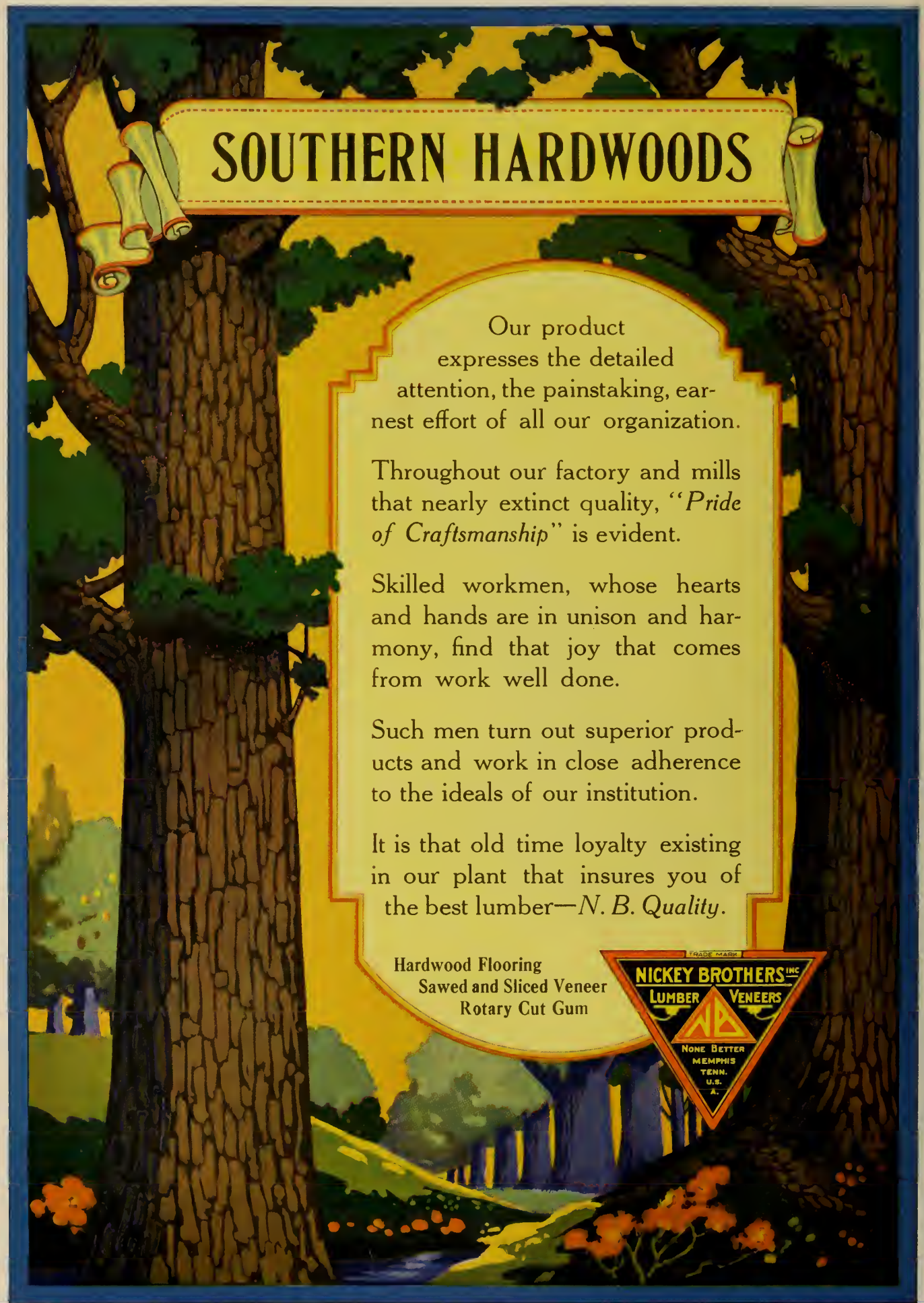
WALNUT BUTTS ◎ OAK ◎ LONG WALNUT BURLS ◎ MAHOGANY ◎ POPLAR

The WILLIAMSON VENEER Co.

VIEWS OF OUR PLANT No. 4

H.G.W.D

NICKEY BROTHERS INC.
LUMBER VENEERS
NB
NONE BETTER
MEMPHIS
TENN.
U.S.A.
Figured Gum
Because of Large Stocks
— Highly Figured Wood —
Smooth Cutting & Moderate Prices.
You will find it advantageous and
economical to buy N.B. Figured Gum.
NICKEY BROTHERS, INC.
MEMPHIS, TENN.


SOUTHERN HARDWOODS
Our product expresses the detailed attention, the painstaking, earnest effort of all our organization.
Throughout our factory and mills that nearly extinct quality, "*Pride of Craftsmanship*" is evident.
Skilled workmen, whose hearts and hands are in unison and harmony, find that joy that comes from work well done.
Such men turn out superior products and work in close adherence to the ideals of our institution.
It is that old time loyalty existing in our plant that insures you of the best lumber—*N. B. Quality.*
Hardwood Flooring
Sawed and Sliced Veneer
Rotary Cut Gum
TRADE MARK
NICKEY BROTHERS INC
LUMBER VENEERS
NB
NONE BETTER
MEMPHIS
TENN.
U.S.
A.

Do You Want it Quick?

SEE US

Twenty-One Years' Experience

has taught us the

General Average Sizes Used

and we always have them

Poplar - Gum - Oak, Etc.

WALTER CLARK VENEER COMPANY

GRAND RAPIDS, MICH.

Panels of Quality

for all purposes

Made to Order and Stock Sizes

FLUSH VENEERED DOORS

VENEERED STILES and RAILS

NATIVE OR FOREIGN WOODS

27 years' experience in Plywood Production.

HAY AND COMPANY, LIMITED

Woodstock - Ont.

The Lumber Market

Domestic Woods

Business in the lumber line continues good although the unfavorable weather at many points has retarded structural operations. However, sales are progressing favorably and prices, owing to the scarcity of stock, show a decided tendency to stiffen. There is a shortage of dry stock at shipping points and wholesalers, who have widths and thicknesses that are in demand, are considered fortunate. The cut this season at all mill points will be very large and it is expected some plants will be in operation by the end of April. It is believed that log-driving conditions this spring will be favorable and labor steady and abundant at most producing centres.

Several more stocks of softwood have been sold at a considerable advance over last year which is in itself a good indication that 1923 will be one of steady trade and increasing confidence in the lumber arena.

Building permits are keeping up well at all the larger centres, and if there would be a general trade revival there would be little to complain of in the whole lumber line. The one great peril is that of runaway prices, and while manufacturers and wholesalers are doing their best to ward off such an undesirable state of affairs, it would look as if the danger point is being approached in certain sales.

Everyone concedes that the lumber business will be active until the end of June but after that no one cares to make predictions. When the new stock comes on the market in large quantities, it is not known whether prices will maintain their present level or recede to a considerable extent.

In the hardwood line there is a large call for birch, elm, maple and basswood. The demand for 5/4, 6/4 and 8/4 No. 1 common and selects and 4/4, 5/4 and and 6/4 F.A.S. is good. The call for 8/4 F.A.S. appears to be slow at the present juncture. Dry lumber remains scrace, of course, with the supply of several lines being inadequate to meet the needs of the trade. There seems to be a belief prevalent that lumber manufacturers will this season not have any serious operating difficulties to contend with and they will be in a position to maintain an adequate supply.

Eastern representatives of Coast mills report that there is a fair demand in Ontario and Quebec for mixed car lots and rough clears. The shingle market is rather dull just now but is expected to pick up very soon. While it is not easy to get car lots of many materials, from the Coast, owing to the heavy demand from across the border and the large export trade, it is still possible for shrewd eastern salesmen to closely watch mill stock sheets and have mixed carloads of flooring, ceiling, casing, base, etc., made up and sent in transit. They are able to dispose of this on a satisfactory basis in most instances.

On the whole trade in the lumber line is encouraging with a good basic foundation, and if the farmers have a good crop in 1923 there is no reason why rural retailers, with whom business has been rather dull for some time, will not enjoy a splendid turnover and increasing demand for their products. It may be stated that many yard men are waiting until a consuming demand actually sets in before stocking up to any greater feetage basis than what they have in hand at the present time.

There is activity in hardwood flooring and manufacturers report that business with them is very good at the present time and sales are generally running ahead of the corresponding month of last year. All plants are busy and prices in every line of flooring are firm. There was recently an increase of $5.00 per M in No. 2 factory flooring in maple, birch and beech.

There are grave dangers of a runaway market in the lumber line in spite of all that has been said against it and every precaution that may be taken to guard against a circumstance of this kind. Lumbermen admit that runaway values will prove disastrous to the trade through discouraging building activity. Strange to say the present market is being established by over-eagerness on the part of purchasers rather than a high-price disposition by manufacturers, so certain lumbermen declare.

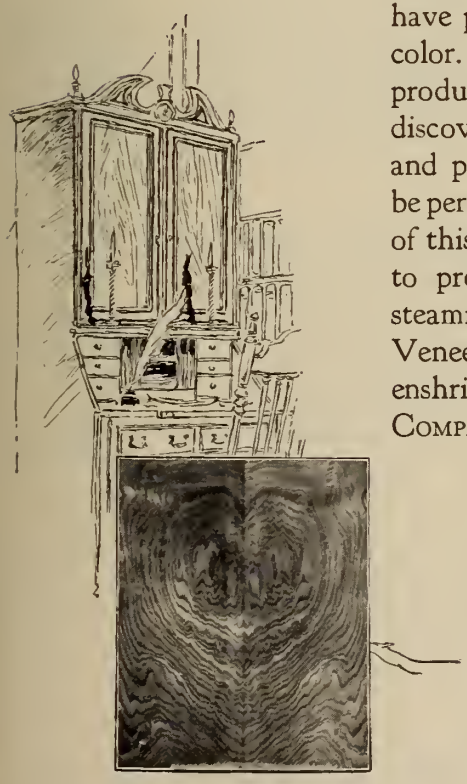
Imported Woods

Evansville, Ind.—Trade with the hardwood lumber manufacturers of Evansville and other towns in this section has been unusually good during the past two or three weeks, and lumbermen are expressing the opinion that business conditions will continue to improve steadily during the next six or eight months. Both orders and inquiries are coming in freely and judging by the number of inquiries, the wholesalers are led to believe that 1923 is going to show a larger volume of business than last year. Prices are holding firm. There have been advances on certain items. Lumbermen say in their opinion there is not going to be a runaway market, and this is something that they do not desire at this time. Logging conditions in the south are expected to become much better with the clearing up of the weather. Maple and ash have been in strong demand for some time past due to the increased demands of the automobile industry. Gum also has been moving briskly and the furniture manufacturers in Evansville have been buying gum quite liberally.

Memphis, Tenn.—Demand for southern hardwoods continues excellent, and volume of business is just as large as can be effected with present stocks and with the current shortage of box cars, which is rather pronounced on some of the roads in the south and southwest. All of the major consuming industries are buying in a substantial way, under the leadership of manufacturers of automobiles, furniture, flooring, interior trim and boxes. The strongest demand is for plain and quartered sap gum, cypress, plain red and white oak, elm, ash and maple. The supply of sap gum, in both plain and quartered, is comparatively light, while such inroads have been made on the supply of elm and maple that these are being shipped green from the saw. Ash is in better call now than at any time since the market resumed its upward tendency, while the activity of manufacturers of sash, doors, interior trim and flooring is resulting in a large business in the sap gum, plain oak, poplar and cypress. Some improvement is noted in the inquiry for plain and quartered red gum, but the latter is rather quiet, especially as compared with sap. There is some increase in demand for quartered red and white oak in No. 1 common and better, but this item, too, is rather sluggish as compared with the re-

FROM FOREST TO FURNITURE

IN the cathedral depths of virgin forests the making of W M Veneers has been going on for centuries. Beneath the hoary bark of venerable trees, sun, wind and rain have painted rare masterpieces in grain and color. ¶ To that which Nature herself has produced we can add nothing. It is for us to discover and, with infinite care, to preserve and pass on to you our priceless heritage to be perpetuated in things of beauty. ¶ Because of this spirit of devotion we have been able to produce through exacting methods of steaming, cutting, drying and packing, W M Veneers with patterns as perfect as when enshrined in the living tree. WOOD-MOSAIC COMPANY, *Incorporated,* LOUISVILLE, KENTUCKY.



W M
Veneers

mainder of the list. Production is being pretty well maintained.

Louisville, Ky.—Conditions in Louisville are very satisfactory and it is reported by local manufacturers that production is improving as a result of better movement of country logs to local mills, and better logging conditions at southern mills. Demand is so strong that stocks of dry lumber at mill yards are low and more and more lumber is being shipped green from the saw, or only partly air dried, as buyers figure to run it through a dry kiln anyway. Demand for kiln space is active, and kilns are being operated at capacity. In addition to good lumber demand there is a very active demand for veneers and panels. Movement is heavy in ash, oak, red and sap gum, walnut, poplar and elm, while hickory, maple and beech have been in better movement, and chestnut is figuring in movement more freely. Poplar siding demand is abnormally heavy, and creating a heavier demand on poplar lumber production. No. 1 common grades are strong in almost all lumbers now, the top grades being fair, however, while low grades are considerably firmer.

Advising Purchasers on Care of Upholstery

(Continued from page 77)

and after several hours sponge with carbon tetrachloride to remove the lard.

It is apparent that all stains should be removed just as soon as possible. To allow them to dry increases the difficulty of removing them.

While these methods can be safely used on the majority of fabrics, highly prized pieces, and especially silk plushes, should be treated by an experienced dry cleaner.

Dont's

Don't use furniture polishes, oils or varnishes on upholstery leather. They will cause it to become sticky and to lose its lustre. When leather is in need of cleaning, use a damp cloth and a little castile soap. Rinse with another damp cloth and dry with a clean dry cloth—returning the original lustre by rubbing briskly.

Don't forget that moths will lay eggs under slip covers. When using them, remove occasionally and brush the furniture as advised previously.

Don't use a carpet beater on upholstered furniture. The frequent use of the vacuum cleaner and the whisk broom will serve to remove all objectionable dust.

Don't fail to remove the loose cushions occasionally and run the hand in the space between the seat and the back. The usual collection of keys, coins, pencils, etc., that this practice will divulge will do the furniture no harm, but one often finds foodstuffs that are subject to decay.

Don't sit on spring arms, stand or kneel on spring edge seats. Although this practice will show little effect on a well-built piece of furniture, it constitutes an abuse and should be avoided.

Don't use the vacuum cleaner on down-filled cushions, as it has a tendency to pull the feathers through the covering. A careful brushing will suffice.

Don't allow household pets to lie on upholstered furniture. They may not only soil it, but cats, especially, will ruin the cover with their clawing.

News of the Trade

A vote of $250,000 for the purchase of new flying equipment for the Canadian Air Force was passed recently in the House of Commons.

The Port Hope veneer factory at Port Hope, Ont., is already busy preparing for the demand for baskets and boxes that will be created when the fruit crop is gahtered. They will also manufacture cheese boxes of double-ply veneer.

J. Walter & Sons, Kitchener, Ont., supplying the furniture trade with carvings, rosettes, etc., are preparing plans for a new factory to cost about $35,000. The new building will be one storey, measuring 60 x 145 ft.

H. W. Strudley, president of the Imperial Rattan Co., Stratford, Ont., was recently elected president of the Stratford Board of Commerce.

Matane & South Shore Company, Ltd., St. Jerome de Matane, Que., was recently formed to manufacture sash and doors, boxes, shooks and other wood products. Capital $20,000.

The Board of Education at Hamilton, Ont., are contemplating installing 1,296 movable seats and desks at a cost of about $12,750.

The Twin City Sash & Door Co., Ltd., Kitchener, Ont., were recently incorporated as general woodworkers. A. H. Koepke and E. Erb are two of the incorporators. Capital $40,000.

Ramsey & McIntosh, Ltd., Toronto, is a new firm lately incorporated to manufacture and deal in varnishes, polishes, sandpaper, glue and other similar articles used in the manufacture and finish of furniture. Capital $40,000. W. E. Ramsey and H. W. McIntosh, both of Toronto, are two of the incorporators.

The Pan-Orpheus Co., Ltd., Woodstock, Ont., was recently granted a provincial charter to manufacture and deal in pianos, organs, phonographs and other musical instruments. Capital $500,000. Two of the incorporators are S. E. Wedd and R. B. Whitehead, both of Toronto.

Federal Furniture Ltd., Toronto, is a new organization recently formed to manufacture and deal in all kinds of furniture. Capital $40,000.

T. C. Warwick & Son, Blenheim, Ont., operating a retail lumber yard and planing mill, have purchased the business of F. W. Kennedy, also of Blenheim.

P. G. Mahoney, Ltd., Calhoun, Dorchester County, N.B., was recently incorporated, taking over the business of Patrick George Mahoney. The firm will manufacture and deal in wood products. Capital $199,000.

E. M. Barrett, of Barrett Bros., Ottawa, general woodworkers, recently returned home after several weeks' vacation in the South.

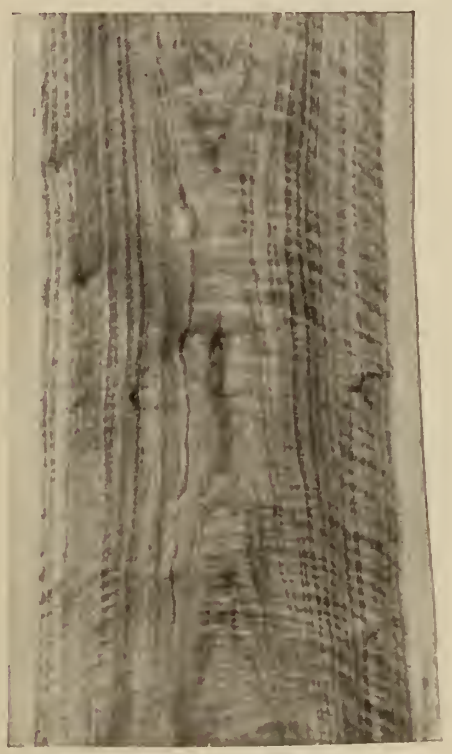
Fire recently destroyed the plant of the Gilbert Boat Co., at Brockville, Ont., with all contents, including a large number of boats and canoes in the process of construction. The fire, fanned by a strong west wind, spread rapidly and gutted a large stone storehouse, part of the Office Furniture and Supply Co. The loss to the two firms will be in the neighborhood of $30,000.

Keenan Woodenware Co., Owen Sound, Ont., will start work shortly on a large warehouse. The building will be 72 x 135 ft. and of stone construction, two storeys high.

The Welch Lumber Co., 2219 Yonge St., Toronto, will

C. L. WILLEY COMPANY

The Largest Veneer Plant in the World



"Once there was a man who couldn't see the forest on account of the trees."
—Old Proverb.

AND rarely to him who has been vouchsafed only the vision of the trees is there given the realization of the great inner beauty which lies hidden behind rough brown bark. There, in enduring form, are the richest colors of the forest.

WILLEY craftmanship reveals their hidden splendors, in the wondrous grain of veneers, with a genius that is nothing short of artistry. Willey is served by men with that uncanny sense of selection—amounting almost to instinct—required to recognize the native trees which will yield veneers of exceeding rarity and great variety—men who cannot "see the forest on account of the trees".

Then, from logs to finished product, every step in the WILLEY plant is accomplished with an artist's painstaking effort—no labor is too great, no process is too slow, to reveal, and enhance to the highest degree, the exquisite patterns wrought by Nature.

Small wonder then that WILLEY Veneers are famous the world over; and that WILLEY Veneers are found wherever fine work is appreciated.

YOUR desire for beautiful veneer—and your special need, whatever it may be—can be fully and quickly met by the Willey plant, because of unusual stores of desirable material. We share with you our knowledge and artistic appreciation of veneer and its uses, and select with trained judgment and thoughtful consideration the most perfect specimens for your peculiar purposes. Write us concerning your requirements.

Veneer & Lumber

Walnut
American and Circassian
Mahogany
Quartered Oak
English Oak
Satinwood
Vermilion
Teak
Rosewood
And Many Other Foreign and Domestic Woods

(2215)

C. L. WILLEY COMPANY

2558 South Robey Street
CHICAGO

H. ROBERTSON
Sales Representative
for Michigan
232 Lyon St., N.W.
Grand Rapids, Mich.

W. B. VAN
Eastern
Sales Representative
Everett Hotel,
Jamestown, N.Y.

start work shortly on their new mill. The building will be one storey, 40 x 50 ft., of brick construction.

Smith Limited, Levis, Que., is a new enterprise with a $48,000 capital, to manufacture and deal in furniture, caskets, toys and other wood products. George C. Goodfellow and A J. Smith, both of Montreal, are two of the incorporators.

Buckingham & Hoops, Ltd., Toronto, have recently been incorporated to manufacture and deal in polishes, stains, varnishes, paints, etc. Capital $200,000.

Tavistock Building & Mfg. Co., Ltd., Hope St. W., Tavistock, Ont., was recently incorporated with a capital of $30,000. The new enterprise will take over the business of H. W. Kalbfleisch & Sons, and contemplates adding a woodworking department in the near future.

The Soo Lumber Co., Sault Ste. Marie, Ont., will start work immediately on an addition to their mill. The annex will be one storey, 30 x 80 ft., of brick and tile construction. The estimated cost is about $12,000.

Odilon Nadeau & Bros., Beauceville East, Que., makers of carriages and wheels, have started excavation for their new factory. The building will be of frame construction, with stone foundation and will cost about $6,000.

Bourassa-Clifford Corporation, Ltd., Three Rivers, Que., was recently formed to manufacture and deal in wooden goods of all kinds. Capital $45,000. E. Bourassa and H. Clifford, both of Three Rivers, are two of the incorporators.

Modern Upholstering Works, Montreal, is a recent registration.

The Montreal Wood Mosaic Flooring Co. Ltd., have moved from 672 St. Catherine St. W., Montreal, to 852 St. Catherine St. W., near St. Matthew St.

Roxton Baby Carriage Co., Roxton Falls, Que., are contemplating an addition to their factory. Work will go ahead next fall.

Lausophe, Nault, Ltd., Quebec, P.Q., was recently incorporated to manufacture and deal in all kinds of wood products. Capital $145,000.

B. Levin & Co., upholsterers, Winnipeg, Man., are now located at 1086 Main St., of that city.

The upholstering trade in Canada will be interested to know that the Canadian Insulation Co. Ltd., at Selkirk, Man., are installing another unit to their plant for the manufacture of a soft fibrous material from straw for use in the upholstering trade. The straw is put through a process which breaks the woody part from the fibre, salvages any flax seed which remains in it and presses the fibre in bales for shipment. This fibre is becoming a staple article, several thousand carloads being sold to the upholstering industry in Canada and the United States last year.

Work will start about June on the new cheese factory of Z. A. Carriere, 297 St. Patrick St., Ottawa. The owner will install equipment for the manufacture and handling of boxes and containers.

The Fowler Piano Co., Winnipeg, Man., recently suffered a fire loss of about $20,000. The fire started in the polishing room following an explosion.

Fire originating in the finishing room of the Victoriaville Furniture Co. Ltd., Victoriaville, Que., recently caused only small damage owing to the smart efforts of the employees in extinguishing it.

Mortimer Parsons, prominent boat builder, who launched several fine ships during the war, died recently at Cheverie, N.S.

The Owen Sound Chair Co. Ltd., Owen Sound, Ont., are now manufacturing a line of of lower priced case goods as well as chairs at their factory.

The Bruce Wood Workers, Ltd., Chesley, Ont., have for some time been making a close study of all kinds of labor saving machinery and have installed many new pieces of equipment. The company have now one of the most up-to-date plants in the Dominion and claim to be the only firm in Canada making table slides for sale to the trade. They also manufacture flooring which is sold locally and are busy at present with prospects of continued activity.

The Canadian Rattan Chair Co. Ltd., Victoriaville, Que., recently completed a new two-storey addition to their plant. The building will be occupied by offices and sample rooms.

The Gibbard Furniture Co., Napanee, Ont., are completing a three-storey addition to their plant, which will increase their floor space by 20,000 ft.

The Kroehler Mfg. Co., Ontario St., Stratford, Ont., are contemplating the erection of a new storehouse, the dimensions of which are planned to be 44 x 105 ft.

Gareau Freres, Limited, Montreal, is a new organization recently formed to manufacture furniture, toys and other wood products. Capital $99,000. Arthur and Hector Gareau are two of the incorporators.

The Star Flooring Co., 618 Brock Ave., Toronto, is a new organization recently formed to manufacture and deal in hardwood flooring. Several new pieces of equipment have been installed.

Fire totally destroyed the barrel and box factory of Collier & Cole, at Picton, Ont., recently. The entire stock of barrels for the summer business was destroyed. No insurance was carried.

J. E. D'Aoust, of the Yorkton Carriage Works, Yorkton, Sask., died recently.

The Peter Hay Knife Co., Ltd.

Manufacture the Best

PLANER KNIVES and CUTTERS

OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited

GALT, ONTARIO

The Door Carrier System

Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

DRY KILN DOOR CARRIER CO.

1117 Cornell Ave.
INDIANAPOLIS, IND.

The Sidman Lumber Curing Process

IN

Either Wood, Brick or Concrete Building.

Fillers and glazes to preserve the building.

The TAG-ROESCH **Automatic** Time-Temperature and **Humidity Controller.**

Three-ply and Du-o-fold Army Duck Curtains, and Hussey Door Carrier Doors.

Automatic Heating, Ventilating and Humidity Systems for Varnish Rooms.

Reducing and Back Pressure Valves, Oil and Grease Extractors.

Sidmans AUTOMATIC **Suction System** for returning ALL Condensation DIRECT to the Boiler.

Cantilever Steam Traps and other Steam Specialties.

Active and Non-Down Draught Vent Heads for all purposes.

Cleanable Screen Panel and Window Ventilators.

Roller Bearing (Ott) **Channel Iron** Car Bunks and Transfer Cars.

Thermostats, Recording Gauges, and The Sidman Special Hygrometers.

For Description and prices, write

The

Sidmans of Canada

Heating and Ventilating Engineers and Lumber Curing Specialists

LONDON THE SIDMAN LOCK Reg. Trade Mark **ONTARIO**

"Well Bought is Half Sold"

ANYTHING INTERESTING BELOW?

2	cars	4/4"	No. 2 C & B Soft Maple.
1	"	8/4"	" " " "
3	"	4/4"	No. 1 " Birch.
1	"	5/4"	No. 2 " "
5	"	4/4"	No. 2 & 3 Common Ash.
2	"	4/4"	No. 2 C & B Soft Elm.
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ALL BONE DRY

Canadian General Lumber

Company Limited

FOREST PRODUCTS

TORONTO OFFICE:—712-20 Bank of Hamilton Building

Montreal Office:—514 Canada Cement Company Building

Mills: Byng Inlet, Ont.

General Woodworking Trade Mart

Quick Action Section

Equipment Materials Employment

For Sale

Large, second-hand Power Feed Rip Saw, shaving fan, single end tenoner, and swing saw. Apply D. McKenzie Mach. Co., Guelph, Ont. 3-T.f.

Wanted

A man thoroughly experienced in operating Sandpaper machines. Apply, giving full particulars, to Box 153, Canadian Woodworker, Toronto. 4

Wanted

Foreman for well equipped planing mill, able to set up machines and look after bench work, state wages expected to Box 152, Canadian Woodworker, Toronto. 4

MAHOGANY REPRESENTATIVE AGENT WANTED

to represent English House of standing dealing solely in Mahogany—already well established in Canada. Good opportunity for a live wire. Commission basis. Box 150, Canadian Woodworker, Toronto. 4

Wanted

Several experienced Benchmen—one good sticker man who can grind knives and set up machinery. Will have three stickers to attend to. Also one good Machinist for factory work. Steady work all the year. Renfrew Lumber Company, Renfrew, Ont. 4

Mr. Manufacturer

Here's that opportunity to market your product throughout the Quebec field, on a commission basis. Shape a fair proposition in your first letter to "Manufacturers' Agency". Box 154, Canadian Woodworker, Toronto. 4

For Sale

36" used Porter Jointers with or without Billstrom Feeders for same. Practically new. Box 156, Canadian Woodworker, Toronto. 4

Machine for Sale

"Baxter D. Whitney" 30" Scraper, complete with Grinder, extra set of knives and regular equipment, $850.00. Machine as good as new. Box 155, Canadian Woodworker, Toronto. 4

Machinery for Sale

1 heavy Cowan dowel machine with adjustable head.
1 Smith Phillips frame machine.
1 Turning Lathe.
1, 6 x 12 Matcher, McGregor Gourlay.
George Rathbone Limited, Northcote Ave., Toronto. 4

For Sale

1—No. 24 E. & B. Holmes Beer Stave Jointer.
1—No. 55 E. & B. Holmes Beer Stave Bending Machine.
1—No. 110 E. & B. Holmes Bung Boring and Bush Setting Machine.
1—E. & B. Holmes Dowell Attachment with counter shaft. Can be attached to No. 17½ Heading Jointer or used by fastening to bench independently.
Box 151, Canadian Woodworker, Toronto. 4

Used Machinery For Sale

Having installed larger machines, we are offering a 74" Veneer Lathe, can be seen daliy in operation, 37" Model "E" Francis Glue Spreader for waterproof glue, 6, 38", 4 Screw Iron Veneer Presses. Hay & Company, Limited, Woodstock, Ontario. 4-6

GOOD VALUES of Rebuilt Machines in Stock

Band resaw, Connell & Dengler, 54 and 60 inch.
Band rip saw, Yates No. 281.
Circular Sawmill, Hoosier Pony.
Circular resaw, 30 in. and 44 in.
Dowel Machine, Clement.
Dowel Gluer and driver, E. B. Hayes.
Jointer, Falls Machine Co., undercut 24".
Jointers 12", 16", 24".
Lathe, back knife, Clement 40".
Matcher, Woods No. 403 double profiler.
Matcher, Woods 15" x 6" No. 24.
Matcher, American No. 229 hardwood.
Matcher, Berlin No. 94, 15" x 6".
Moulder, Woods 10 and 12" inside.
Moulder, American 7" and 10" 4 side.
Planers, all sizes, single and double.
Sander, endless bed 48" H. B. Smith.
Sander, Moore Machine Co. Belt.
Sanders, Berlin 36" 42", 48" and 60".
Sander, Clement belt roller table.

Woodworking Machinery Co., of Buffalo, 54 Mechanic St., Buffalo, N.Y. 4 T.f.

The Wood Box Greatest Insurance

Secretary H. L. Pease, of the National Association of Box Manufacturers, points out with much force the need for close observance in shipping container selection. Its value far exceeds the buying of so much merchandise represented by shipping containers. Secretary Pease says:

"It is the selection and buying of a service which is either going to protect the product against damage or not, according to the shipping case selected.

"There is a certain unwritten rule which is quite logical: A shipping container must be strong enough to absorb and withstand damages or the product packed within will be damaged.

"Industry generally is beginning to believe this and is basing the selection of its shipping containers more and more upon those damage resisting qualities which are found in wood boxes. The wood box as a shipping container has always been the greatest damage protection insurance. It actually renders the service every manufacturer looks for from his shipping container."

Box Demand Firm in Buffalo

Buffalo, N. Y., April 10.—The box trade is fair, being on about the same scale as last month, but some shops say the high lumber prices are threatening to cut down the volume of business considerably, and they are hopeful that a decline will take place before long. Mills are maintaining prices at a high level and prophesying that the market will keep strong for a good while. They think the box men ought to be able to advance their prices in accordance with the higher cost of lumber, but this is not an easy thing to do. Customers are all looking for cheap boxes, and if they cannot get them fro mthe wooden box manufacturers they will look elsewhere.

So far as can be seen the prospects are that box users will not buy much ahead this year. Business in most lines useing boxes is good, but the margin of profit is not large enough, it is said, to admit of paying any high prices for boxes.. So the box men will be hopeful, but not oversangnine, as to prospects.

The MacLean Box Factory states that trade is on about the same scale as a month ago, and is about normal for this time of year. Buyers are taking boxes as they need them and in fair quantity.

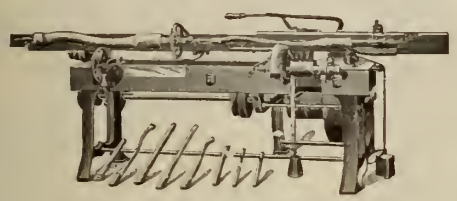
The Victor Box & Mill Co. calls the box trade good, and it is making a specialty of heavy boxes, in which there is quite a demand. The only drawback to the trade is shortage of labor.

The Niagara Box Company finds trade holding about steady, with good prospects for improvement this spring. The shop has a large supply of lumber contracted for to come down the lakes this season.

G. Elias & Bro. had an interesting exhibit of boxes at the Better Homes Exposition, as well as a model of the plant and samples of the various woods employed. Box trade is said to be somewhat improved.

Klotz Machine Co's
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

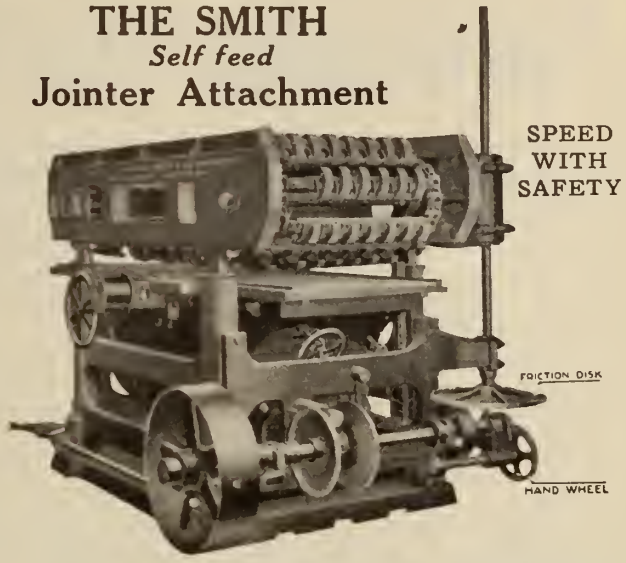
We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

MANUFACTURED BY

Klotz Machine Co.,
Sandusky, O., U. S. A.

Write for descriptive circulars and prices.

THE SMITH
Self feed
Jointer Attachment



Here is a self feed jointer attachment that is saving its users an average of $1200.00 per year.

We will make this attachment to fit any standard jointer or will furnish jointer and attachment complete.

SMITH MACHINERY CO.
SAGINAW - MICH.

We Manufacture
a complete line of

Chair, Cane-Cutting
and
Bending Machines

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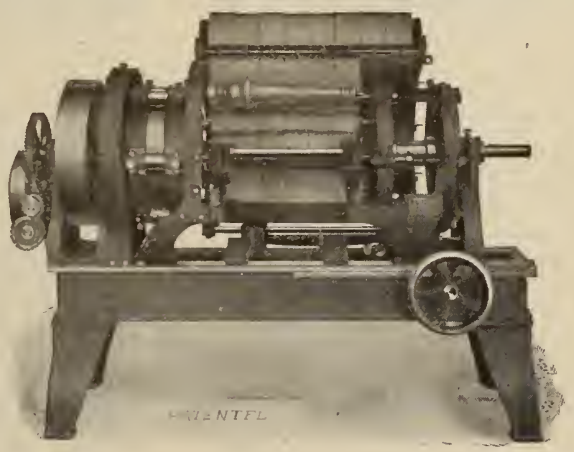
UPON REQUEST

L. G. McKnight & Son Co.
GARDNER, MASS.

Speed Up Production



by installing a Nash Sander for your furniture turnings. Don't lose good orders because of the lack of this equipment. It pays for itself.

J. M. NASH, Milwaukee, Wis.

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AICOHOL
Can. Industrial Alcohol Co. Ltd., Monteal, P.Q.

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BLOW PIPING
Canadian Blower & Forge Co. Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

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Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

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Jackson, Cochrane & Company, Kitchener, Ont.
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Preston Woodworking Machinery Company, Preston, Ont.

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Smart-Turner Machine Co., Hamilton, Ont.

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McKnight & Sons Co., L. G., Gardner, Mass.

CIRCULAR SAWS
Atkins & Co., E. C. Indianapolis, Ind.
Shurly-Dietrich, Galt, Ont.

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Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Black Bros. Co., Mendola, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Sons Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company,
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

CLAMP CARRIERS
Black Bros. Co., Mendota, Ill.
Taylor Mfg. Co., Poughkeepsie, N.Y.

COATED ABRASIVES
Herman Behr & Co., Inc., Brooklyn, N.Y.

COTTON WASTE
Carter, E. T., Toronto, Ont.

COTTONWOOD PANELS
Rathbone, Geo. Ltd., Toronto, Ont.

CROSS-CUT, MITRE AND RIP SAWING MACHINE
Mackenzie Machinery Co., D. Guelph, Ont.

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Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Co., of Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
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Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.
Oliver Machinery Co., Grand Rapids, Mich.

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Pannill Door Co. Ltd., Toronto, Ont.
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DOORS (Flush Veneered)
Pannill Door Co. Ltd., Toronto, Ont.
Hay & Co. Ltd., Woodstock, Ont.

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Rathbone, Geo. Ltd., Toronto, Ont.

DOOR CARRIERS FOR DRY KILNS
Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Wylie & Co., Matthew Glasgow, Scotland

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company,
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Co., Preston, Ont.

DOWELS
Canada Wood Specialty Co. Ltd., Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont.
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Grand Rapids Veneer Works, Grand Rapids, Mich.
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Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.

EDGERS (Single Saw)
Canada Machinery Corporation, Galt, Ont.
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Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

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Simonds Canada Saw Co., Montreal, P.Q.

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Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

EXHAUST HEADS
Sturtevant, B. F. & Co., Galt, Ont.

EXHAUST SYSTEMS
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Atkins & Co., E. C. Hamilton, Ont.

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St. Joseph Iron Works, St. Joseph, Mich.

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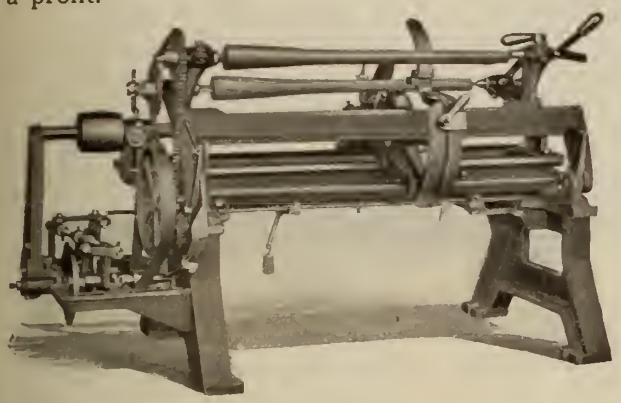
from your timber by working it into handles and other turned work. Short and crooked logs, small trees, and other waste material can be worked at a profit.



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We build Turning Lathes, Sanders, Rip Saws, Bolters, Boring and Chucking machines, etc.

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Chagrin Falls, O., U.S.A.

Dunlop Belting and Hose

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"Gibraltar RedSpecial"—The High-Grade Belt for Transmission Service.

"Gibraltar" Conveyor and Elevator Belts—the Belts with the protective covering of Cord Tire Tread Stock that effectively resists abrasive action.

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Belting, Hose, Packing and General Mechanicaal Rubber Products for Every Purpose.

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The Biggest Value on the Market Today

Do you know that Beaver Brand Saws with their greater cutting qualities and extra long wear are the biggest value on the market today? Hundreds of saw users throughout the Dominion know it —so would you after the first trial. Better let us give you the full facts.

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Our facilities for repairing damaged saws ensures a first class job. Prompt service and reasonable charges.

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"Canadian Woodworker" Buyers' Directory—Continued

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Dominion Appraisal Co., Toronto, Ont.

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Carborundum Co., Niagara Falls, N. Y.
Herman Behr & Co., Inc., Brooklyn, N.Y.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GLUE
Canada Glue Co., Brantford, Ont.
Cannon Canadian Co., Toronto, Ont.
Coignet Chemical Products Co., New York, N.Y.
Kane Manufacturing Co., Chicago, Ill.
Monite Waterproof Glue Co., Minneapolis, Minn.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

GLUE HEATERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.

GLUE JOINTERS
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

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Nichols Company, A. S. New York, N.Y.

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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Simonds Canada Saw Co., Montreal, P.Q.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GROOVERS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Mattison Machine Works, Rochford, Ill.

GUM LUMBER
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Hyde Lumber Company, South Bend, Ind.
Merceau-Hawkins Tie Co., Huntington, W. Va.
Sondheimer Co., E., Sondheimer, La.

HAND SCREWS
Fay & Egan Co., J. A. Cincinnati. Ohio.

HANGARS
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

HANDLE & SPOKE MACHINERY
Fay & Egan Co., J. A. Cincinnati. Ohio.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Nash, J. M., Milwaukee, Wis.

HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.
National Hardware Co., Orillia, Ont.
Larsen & Shaw Ltd., Walkerton, Ont.

HARDWOOD LUMBER
Anderson, Shreiner & Mawson, Toronto, Ont.
Atlantic Lumber Company, Toronto, Ont.
Banning, Leland G., Cincinnati, Ohio.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Clark, Edward & Sons, Toronto, Ont.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Canadian General Lumber Co., Toronto, Ont.
Dudley Lumber Co. Inc., Memphis, Tenn.
Hall Bros. Ltd., Toronto, Ont.
Hyde Lumber Co., South Bend, Ind.
Johnston Lumber Co., Toronto, Ont.
Kneeland-Bigelow Co., Bay City, Mich.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Louisville Point Lumber Co., Louisville, Ky.
Luehrman Hardwood Lbr. Co., St. Louis, Mo.
Mercereau-Hawkins Tie Co., Huntington, W. Va
Mississippi Hardwood Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Otis Mfg. Co., New Orleans, La.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Walnut Co., St. Louis, Mo.
Ritter Lumber Co., W. M. Columbus, Ohio.
Sondheimer Co., E., Sondheimer, La.
Stack Lumber Co., Escanaba, Mich.
Stark & Co., Jas. E., Memphis, Tenn.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Stimson & Co., J. V., Owensboro, Ky.
Sullivan, Frank T. Buffalo, N. Y.
Terry-Nicholson-Cates Ltd., Toronto, Ont.
Thurn-Maxsom Lumber Co., South Bend, Ind.
Wood Mosaic Co., Louisville, Ky.
Willey Co., C. L. Chicago, Ill.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HARDWOOD LUMBER (Kiln Dried)
Rathbone, Geo. Ltd., Toronto, Ont.

HEATING SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

JOINTERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shimer Cutter Head Co., of Can. Ltd., Galt.
Simonds Canada Saw Co., Montreal, P.Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNOBS
Waddell Mfg. Co., Grand Rapids, Mich.

LACQUERS
Cosmos Chemical Co., Port Hope, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Klotz Machine Co., Sanducky, Ohio.
Mattison Machine Works, Rochford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.

LEGS
Klise Manufacturing Co., Grand Rapids, Mich.

LUMBER DRY KILNS
Sturtevant, B. F. & Co., Galt, Ont.
Nichols Company, A. S. New York, N.Y.

MACHINE KNIVES
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Peter Hay Knife Company, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

MILL PIPING
Toronto Blower Co., Toronto, Ont.

MITRE SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
McKenzie Machinery Co. D. Guelph, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS
Sturtevant, B. F. & Co., Galt, Ont.

MOTORS
Sturtevant, B. F. & Co., Galt, Ont.

MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati. Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

OAK FLOORING
Rathbone, Geo. Ltd., Toronto, Ont.

OIL STONE GRINDERS
Oliver Machinery Co., Grand Rapids, Mich.

PAINT
Marietta Paint & Color Co., Marietta, Ohio.

PAINT DRYERS
Nichols Company, A. S. New York, N.Y.

PANELS
Calhoun Plywood Co., Sheboyan, Wis.
Hardwood Products Co., Neenah, Wis.
Hay & Co., Woodstock, Ont.
Pannill Door Co. Ltd., Toronto, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PATTERNS PINE
Rathbone, Geo. Ltd., Toronto, Ont.

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BIRD'S-EYE VIEW OF ROCKFORD, ILL.

CARBORUNDUM BRAND GARNET PAPER AND CLOTH IN THE WOODWORKING CENTERS OF AMERICA

ROCKFORD, ILLINOIS

BACK in 1834, two courageous pioneers, Thatcher Blake and Germanicus Kent, built a small dam and a saw mill close to what is now the center of Rockford, Illinois.

This really was the founding of what is now one of the leading furniture centers of America, for today Rockford is a thriving city of 80,000 people—a community that combines with its civic pride the true spirit of industrial energy.

There are over thirty-five model furniture plants in Rockford, employing 4000 men and producing an output valued annually at about $12,000,000.

In the majority of these plants you will find Carborundum Brand Garnet sanding tops and panels, bedroom and dining-room suites, chairs, tables, desks, chests and cabinets—Rockford products that find a market the world over.

Rockford's skilled sanders use Carborundum Brand Garnet because they know what it means to have garnet paper and cloth that really cut clean and fast and uniform, that give a finish in keeping with Rockford ideas of quality.

CARBORUNDUM BRAND GARNET PRODUCTS MAKE GOOD SANDERS BETTER SANDERS

The Carborundum Company, Niagara Falls, N. Y., U. S. A.

New York, Chicago, Boston, Philadelphia, Cleveland, Detroit, Pittsburgh, Cincinnati, Milwaukee, Grand Rapids

"Canadian Woodworker" Buyers' Directory—Continued

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Toronto Blower Co., Toronto, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Preston, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corporation, New London, Wis.
Calhoun Plywood Co., Sheboygan, Wis.
Guelph Patent Cask Co., Scotstown, P. Q.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

POWER TRANSMISSION MACHINERY
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

PULLEYS
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PUMPS—Condensation and Return
Canadian Blower & Forge Co., Kitchener, Ont.
Preston Woodworking Machinery Company, Preston. Ont.

RATTANS
Carter, E. T., Toronto, Ont.

REEDS
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

REVERSIBLE PLANING MILL FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FOLLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
McKenzie Machinery Co., D., Guelph, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

SANDPAPER
Behr & Co., Herman, Brooklyn, N. Y.

SASH DIMENSION
Pannill Door Co., Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW SHARPENERS
Oliver Machinery Co., Grand Rapids, Mich.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKenzie Machinery Co., D., Guelph, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

SHAFTING
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co.. Toronto. Ont.

SOFTWOODS
Canadian General Lumber Co., Toronto, Ont.
Rathbone, Geo., Limited, Toronto, Ont.
Hall Bros. Ltd., Toronto, Ont.
Reese Sheriff Lumber Co., Williamsport, Pa
Luehrman Hardwood Lumber Co. Chas. F., St. Louis, Mo.
Terry-Nicholson-Cates Ltd., Toronto, Ont.

SPRUCE DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM & OIL SEPARATORS AND REFINERS
Smart-Turner Machine Co., Hamilton, Ont.

STEEL PLATE PLANING MILL EXHAUST
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

STEEL PRESSURE BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Walter & Company, B., Wabash, Ind.
Watertown Table Slide Co., Watertown, Wis.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Calhoun Plywood Co., Sheboygan, Wis.
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

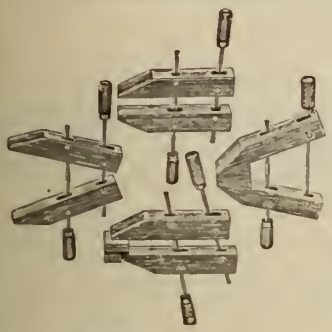
TRUCKS
National Dry Kiln Co., Indianapolis, Ind.
Oliver Machinery Co., Grand Rapids, Mich.

TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

The "JORGENSEN"
Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws



The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."

"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

Manufactured only by the

Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

For Sale By

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Lewis Bros., Limited .....Montreal

"The Phillips Line"

Window Frame Machines

This is the work ☞

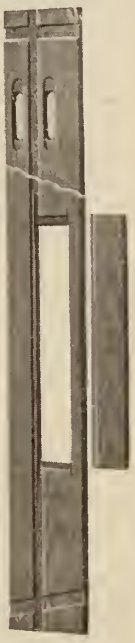
Let us tell you about the machine.

Testimonials from hundreds of satisfied users.

F. V. Phillips invented and built window frame machines for 40 years. "The Phillips Line" is the culmination of his efforts.

Your inquiries solicited.

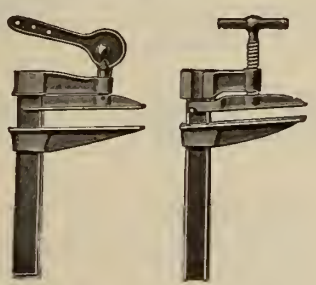
Address Dept. C.W.



Atlas Mfg. Co. of Orlando

Orlando, Fla., U. S. A.

Colt's Clamps
for the
Woodworker



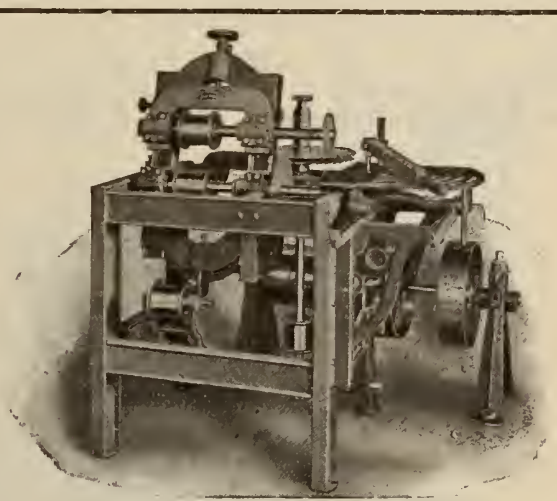
Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.



No. 19 Saw Tenoner
No. 20 Large Saw Tenoner

Fitted with five saws, has replaced cutter head machines; for all jointing and halving in wood shops and for automobile and carriage wood-work it is the best machine on the market.

Much door, window, sash, furniture and cabinet work is done with this machine where a nice, smooth tenon is required. It is also used for the halving and jointing of stock at any angle.

Tenoners equipped with flexible coupling for direct motor drive or for countershaft.

No. 19 Small Saw Tenoner.
No. 20 Large Saw Tenoner.
No. 21 Regular Bevel Saw.
No. 22 Large Bevel Saw.
No. 23 8½ Irregular Dresser.
No. 24 6" Irregular Dresser.

We also manufacture metal working machines.

Write for catalogue

Pettingell Machine Co.

Amesbury, Mass.

Mention Canadian Woodworker

"Canadian Woodworker" Buyers' Directory—Continued

TURNED WOOD GOODS
Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TURPENTINE
Carter, E. T., Toronto, Ont.

TWIST WORK
Klise Manufacturing Co., Grand Rapids, Mich.

UPHOLSTERY
Oriental Textiles Co., Oshawa. Ont.

UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

VACUUM PUMPS
Canadian Blower & Forge Co., Kitchener, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Guelph Patent Cask Co., Scotstown, P. Q.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Nickey Bros., Memphis, Tenn.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Standard Veneer Co., Portland, Me.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER DRYERS
Nichols Company, A. S. New York, N.Y.

VENEER SAWS
Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

WALLBOARD
Ontario Gypsum Co., Paris, Ont.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Sawmill Co., Des Moines, Iowa.
Maus Lumber Co., Chas. O. South Bend, Ind.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Walnut Company, St. Louis.
Sullivan, Frank T., Buffalo, N. Y.

WASTE
Carter, E. T., Toronto, Ont.

WINDOW FRAME MACHINE
Atlas Mfg. Co., Orlando, Florida.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.

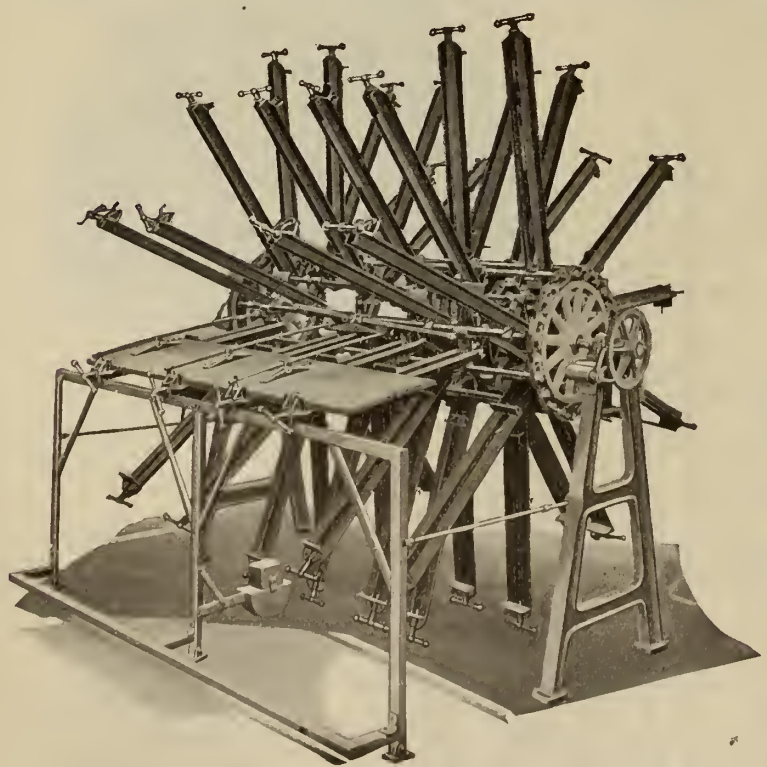
WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Pettingell Machine Co., Amesbury, Mass.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

Speed + Perfect Joints = Low Costs



The Taylor TRADE MARK

CLAMP CARRIER
for
Small Jobs in the Big Plant
All Jobs in the Little Plant

1. Natural standing position of operator.
2. No Juggling of heavy clamps.
3. No bending or walking.
4. No pile to overturn to get work glued first—simply move clamp one section.
5. Less space than equal number of clamps with work in, piled on the floor.

Any size to suit your work. 8 and 12-section wheel type. 16, 20, 30 and 40-section chain type. 4, 5 or 6 clamps per section for stock up to 42-in. wide.

Representatives:
A. R. Williams Machinery Co., Toronto. Canada

James L. Taylor Mfg. Company
Poughkeepsie, N.Y., U.S.A.

Lumber for Local Shipments

California White Pine
5047 ft. 10 4 C. Selects
1116 ft. 12 4 C. Selects
2049 ft. 12 4 1 & 2 Clear
1905 ft. 12 4 No. 3 Clear
11905 ft. 8 4 C. Selects

California Sugar Pine
3800 ft. 6/4 No. 3 Clear
27500 ft. 6/4 No. 1 Shop
20696 ft. 6 4 No. 2 Shop

Western White Pine
700 ft. 12 4 No. 3 Clear
2800 ft. 8 4 No. 3 Clear
3200 ft. 8 4 No. 2 Shop
3500 ft. 6 4 No. 3 Clear
3000 ft. 6 4 No. 1 Shop
4000 ft. 6 4 No. 2 Shop
5800 ft. 4 4 x 12 No. 3 Clear
2700 ft. 4 4 x 10 No. 3 Clear
3200 ft. 4 4 x 8 No. 3 Clear
4000 ft. 4 4 x 6 No. 3 Clear
5700 ft. 4 4 x 4 & 5 No. 3 Clear

Western Hemlock
11500 ft. 4 4 x 10 & 12 Clear

Aromatic Clear
1200 ft. 4 4 Common and Better

Chestnut
9291 ft. 6 4 1 & 2
10842 ft. 6 4 Selects
16289 ft. 4 4 1 & 2
22187 ft. 4 4 Selects

B.C. Fir
6000 ft. 8 4 1 & 2 Clear
5000 ft. 6 4 1 & 2 Clear
400 ft. 6 4 Edge Grain
600 ft. 5 4 1 & 2 Clear
9000 ft. 4 4 1 & 2 Clear

Gumwood
10500 ft. 4 4 1 & 2 Figured Red
36716 ft. 4 4 1 & 2 ¼ Sawn Red
1100 ft. 6 4 1 & 2 Sap 9-12
1600 ft. 6 4 1 & 2 Sawn Red

Mahogany (Extra)
800 ft. 1/2 1 & 2 10 up
7700 ft. 4 4 1 & 2
1200 ft. 4 4 Selects
2900 ft. 6 4 1 & 2
2200 ft. 8 4 1 & 2

¼ Cut White Oak
2500 ft. 1 2 1 & 2
4440 ft. 4 4 1 & 2 10 up wide
19800 ft. 4 4 1 & 2 (6-9½)
19500 ft. 4 4 1 & 2 4 & 5
2145 ft. 6 4 1 & 2 10 up
2097 ft. 6 4 1 & 2 (6-9½)

Plain White Oak (West Virginia)
9000 ft. 4 4 1 & 2
5800 ft. 4 4 Selects
3600 ft. 6 4 1 & 2
2600 ft. 8 4 1 & 2
3780 ft. 12 4 1 & 2

¼ Cut Red Oak
1100 ft. 4 4 1 & 2

Plain Red Oak (West Virginia)
250 ft. 1 2 1 & 2
22500 ft. 4 4 1 & 2
97000 ft. 4 4 Selects
5100 ft. 6 4 1 & 2 (10-13)
1500 ft. 6 4 1 & 2
2800 ft. 8 4 1 & 2

Walnut
2000 ft. 4/4 1 & 2
1500 ft. 4 4 Selects
1700 ft. 6 4 1 & 2

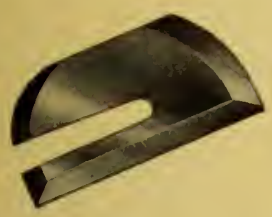
Whitewood
10500 ft. 4 4 clear saps
600 ft. 6 4 clear saps
1500 ft. 8 4 clear saps
1800 ft. 12 4 1 & 2 Yellow

Birch
11000 ft. 4 4 Clear face
2200 ft. 6/4 1 & 2 (10-13)

Maple
5000 ft. 4 4 Clear face
1700 ft. 6 4 1 & 2 (10-13)

GEORGE RATHBONE LTD., Northcote Ave., Toronto

Established 1881



ATKINS

STERLING QUALITY

SAWS and KNIVES ECONOMIZE

ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing

Atkins Sterling Quality Saws

and Machine Knives

Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.

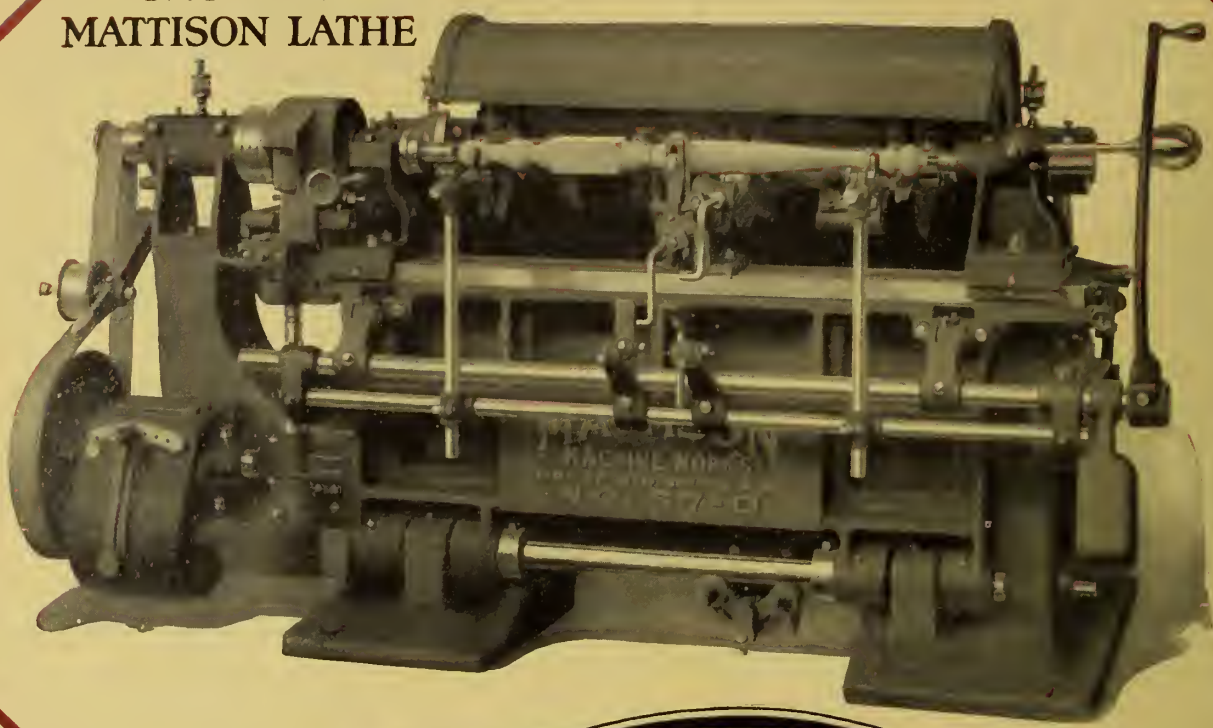
Write to-day for our Knife Booklet "C.W." and Pattern Template Poper.

E.C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

The NEW
MATTISON LATHE



IF you are attempting to produce the turnings for your Period Patterns with the slow, inaccurate hand lathe—

If you are still trying to meet competition by shaping your turnings with old-style. antiquated turning machines—

If you are paying a profit to the other fellow to make your turnings for you—

This New Model 57-D Mattison Automatic Shaping Lathe will make you independent of skilled hand turners—

It will save you the profit the job shops get on every turning they make for you—

It will increase your production, save material, broaden the scope of your designer, and give you turnings when you need them in whatever quantities are required, all at minimum labor expense.

Send for bulletin showing how this New Model is profiting others

There are More than 3000 Mattison Lathes in use

The Result of Continuous Development—

Through Twenty-five Years

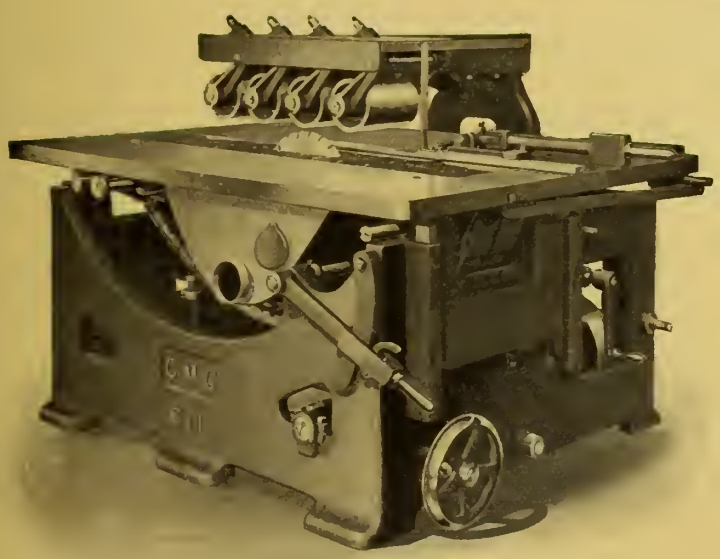
MATTISON
MACHINE WORKS
Rockford, Illinois, U. S. A.

Volume Twenty Three TORONTO, May, 1923 Number Five

CANADIAN WOODWORKER and Furniture Manufacturer

C.M.C. *"The Guarantee of Quality"*

Heavy and Accurate Construction
Features this Ripping and Jointing Saw
(with continuous chain drive feed)



Can you afford to be without this machine after considering the following facts?

"That it will break out more stock for subsequent dressing or jointing than three hand feed saws with three rippers and three helpers".

"That it will do work truer than any man can rip by hand". "That subsequent dressing is but the removing of a mere skin". "That owing to the operator's absolute comfort and safety any man would be willing to run it, and no previous experience is needed.

CANADA MACHINERY CORPORATION
LIMITED

GALT - ONTARIO

Manufacturers of Iron and Woodworking Machine Tools.

Toronto Sales Office - 721 Bank of Hamilton Bldg.

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WORTH REMEMBERING

As Canada's largest distillers of alcohol our interest is centered in the advance of the alcohol industry—not merely in the creation of sales. We maintain a service to solve your alcohol problems and it is your privilege to consult our staff of chemists when necessity arises. Our advice will be authoritative, impartial and of course, without charge. We are alcohol headquarters for Canada. Make us headquarters for your alcohol requirements.

CANADIAN INDUSTRIAL ALCOHOL COMPANY LIMITED
HEAD OFFICE Montreal P.Q.
REFINERY Corbyville Ont.

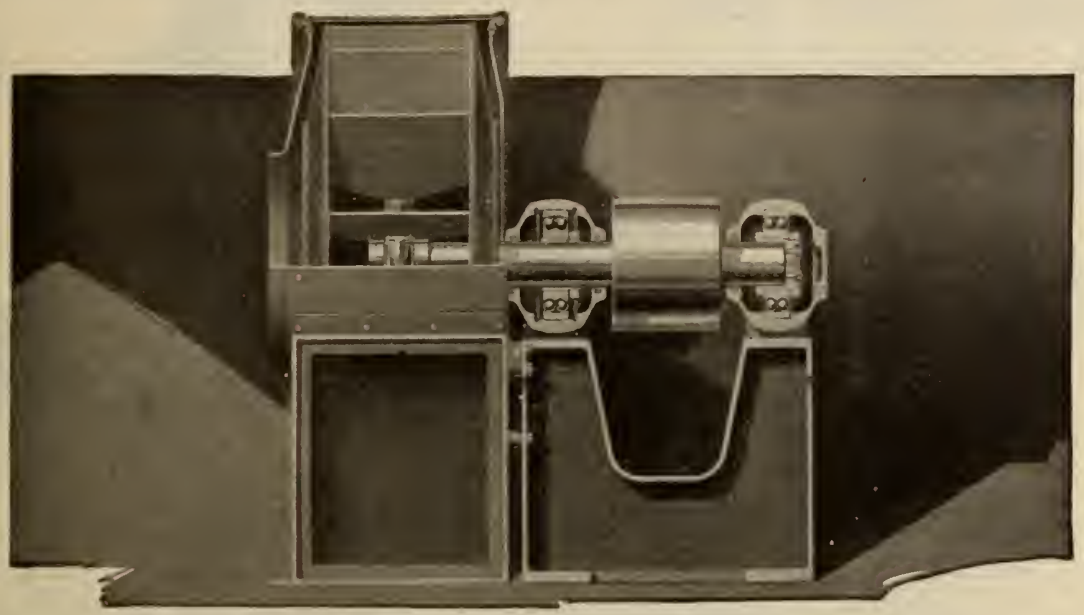
Distributing Warehouses
MONTREAL
TORONTO
WINNIPEG
VANCOUVER

Manufacturers of

MAPLE LEAF BRAND

Ethyl Alcohol—Cologne Spirits—Absolute Alcohol, B. P. Methylated Spirits and Denatured Alcohol (all formulae)

SKF



Hiding Away Your Fan Won't Hide Its Troubles

HIDDEN away in inconvenient places such as basements, ceilings or other out-of-the-way spots (frequently out of sight and most of the time out of mind) your fan or blower often operates under unusual conditions of neglect. Breakdowns can be avoided only if the bearing equipment is absolutely reliable.

Self-aligning ball bearings marked **SKF** solve fan-bearing problems, particularly so when used in a construction consisting of a sheet metal frame riveted to a cast base. The unique design of the bearing automatically compensates for the misalignment which naturally follows this practice.

Lubricating once every three or four months is all the attention ball bearing equipped fans require. All danger of hot boxes or oil leakage is eliminated, thus saving repair charges and lowering upkeep costs.

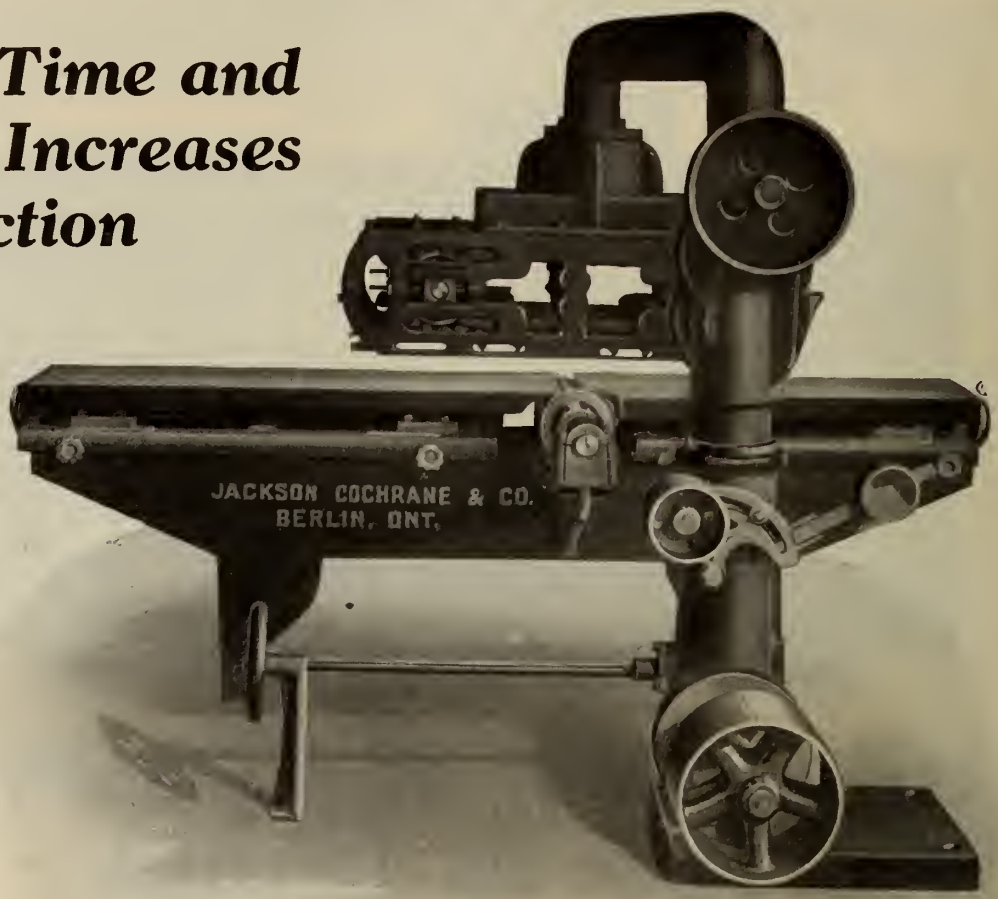
Specify **SKF** marked ball bearings on your new fan equipment and replacements—then forget the troubles that curtail output and eat into your profits.

CANADIAN **SKF** COMPANY, LIMITED
TORONTO — MONTREAL

Normal View *Deflected View*

No. 38 Self-Feed Jointer Attachment

Saves Time and Labor, Increases Production



WE GUARANTEE that this machine will increase the capacity of the hand fed jointer from
THREE TO FOUR TIMES

This Herzog Swing Cut Jointer Attachment is the best investment that can be made where a factory has but one or two jointers which are used at times for squaring or edging, as this attachment can be quickly swung free.

It is practically fool proof, minimizes the risk of a dangerous machine and can be operated by two boys to do the same work as four men on hand-fed machines. All widths and lengths of stock are handled smoothly with very little adjustment.

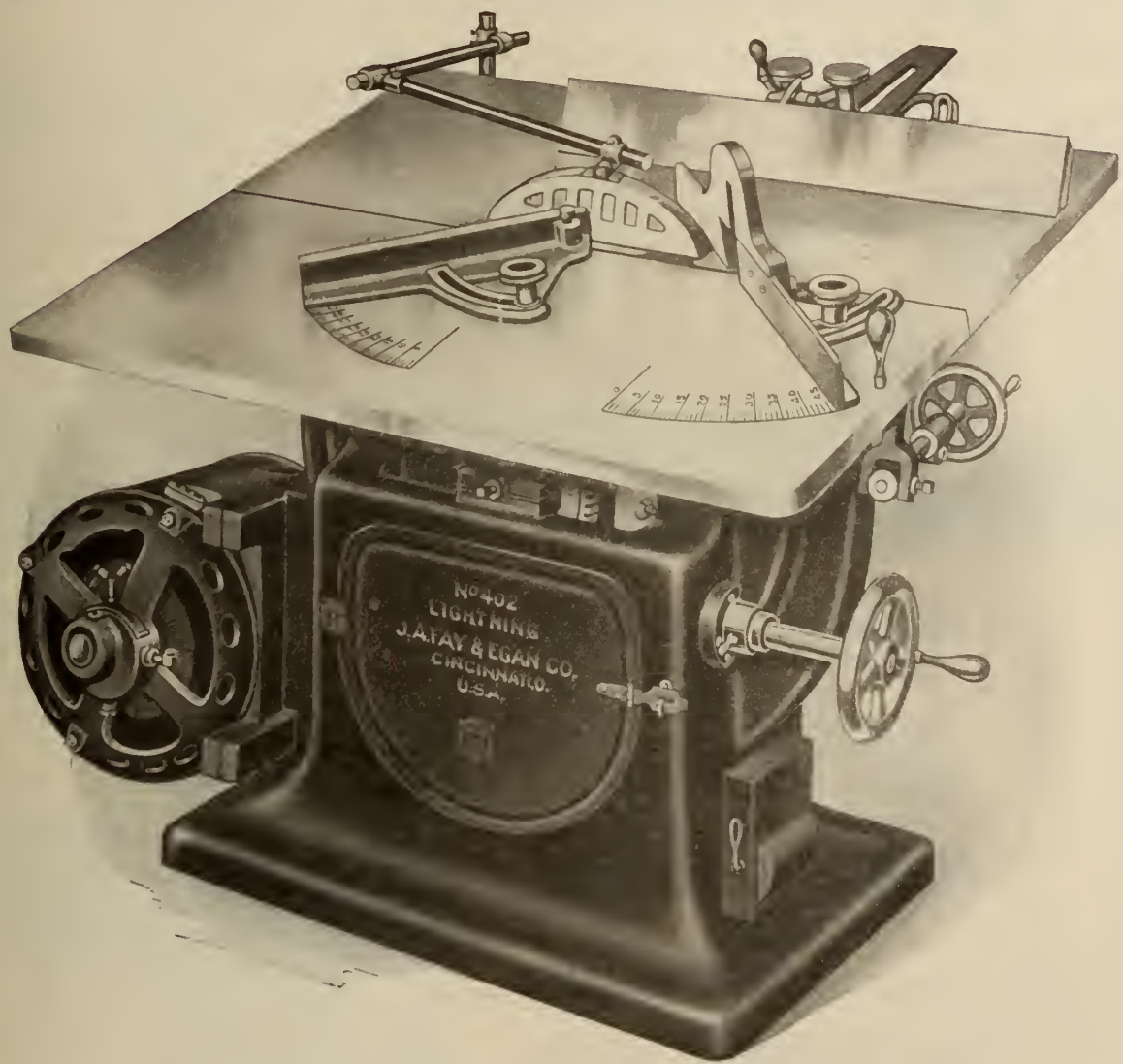
The attachment is strongly built and driven through gears running in oil. Comes in three sizes provided with cone pulleys with two speeds of 25 and 40 feet per minute.

Write for full particulars and prices.

Jackson, Cochrane & Company
KITCHENER, : : CANADA

ITS UNLIMITED APPLICATION

makes it essential to every shop where a wide range tool is necessary



No. 402 "Lightning" Universal Saw Bench

J. A. Fay & Egan Company

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

153-173 W. Front St. - - Cincinnati, Ohio, U. S. A.

Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.
Branches: Montreal, St. John, N. B., Winnipeg, Vancouver

HYDRAULIC VENEER PRESS

ESTABLISHED 1889

THE GLOBE FURNITURE CO. LIMITED WATERLOO ONTARIO

THIS LABEL IS A GUARANTEE OF QUALITY

MANUFACTURERS OF
Artistic Church Furniture
Pews Pulpit Furniture Altars
Vestment Cases Altar Rails
Lecturns Choir Furniture
ALSO
SCHOOL FURNITURE
OPERA & ASSEMBLY CHAIRS

Waterloo, Ontario,
November 29th, 1922.

Woodworker Publishing Company, Limited,
Advertising Department,
345 Adelaide St. W.,
Toronto, Ontario.

Gentlemen:-

In answer to your favor November 25th. re Hydraulic Veneer Press, we are glad to advise that we are well pleased with this Hydraulic Press which has increased our output four times with the same number of men as compared with the old ordinary way of Hand Presses.

It gives a better product under easier working conditions. Causes less warping due to applying the proper pressure which can be gauged according to the nature of the work to be glued. By pressing with the ordinary Screw Press it depends upon the intelligence of the Operator using brute force, thus applying too much pressure on certain material and not enough on others, thereby causing inferior workmanship.

Furthermore, the unloading of the Hydraulic Press is done automatically on rollers without any heavy lifting by the Operator, whereas on the ordinary Screw Press the forms must be left in until the veneer is dry. On the Hydraulic Press the veneers are put in retainers and unloaded as stated above, thereby increasing the capacity at least four fold.

Youre very truly,
THE GLOBE FURNITURE CO. LIMITED
J. Bahnsen
GENERAL MANAGER

J. Bahnsen
3.

WHERE ADDRESS ALL COMMUNICATIONS TO THE COMPANY AND NOT TO INDIVIDUALS

NOT WHAT WE SAY BUT WHAT THEY SAY COUNTS

Six Points of Superiority

1. Provides more Pressure.
2. More Even Pressure.
3. A Measured Pressure.
4. Saves Time and Labor.
5. Increases Production.
6. Turns Out Better Work.

Let us prove it

"—almost impossible to get along without it"

This is high testimony indeed to the efficiency of the Hydraulic Press, and four years without a cent for repairs spells great economy. What the Perrin Press has done for others it can do for you. Does it not merit investigation? Let us give you full particulars.

WILLIAM R. PERRIN
LIMITED
530 King St. E., TORONTO, ONT.

Ten Years Ago and Now!

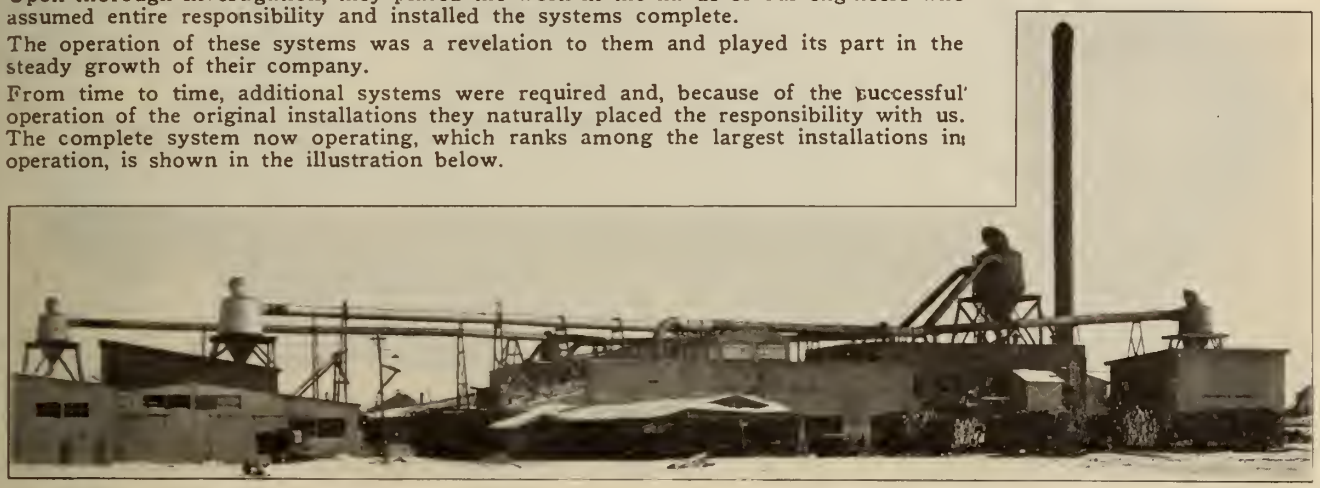
Another Case of our Successful Blower System Installations Recorded in the Progress of the PEMBROKE SHOOK MILLS

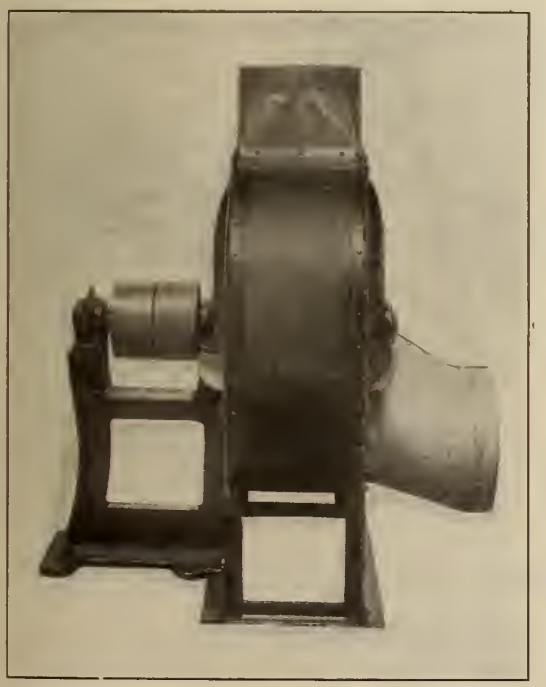
Ten years ago, the Pembroke Shook Mills decided that good blower systems were necessary to the efficiency of their mills.

Upon thorough investigation, they placed the work in the hands of our engineers who assumed entire responsibility and installed the systems complete.

The operation of these systems was a revelation to them and played its part in the steady growth of their company.

From time to time, additional systems were required and, because of the successful operation of the original installations they naturally placed the responsibility with us. The complete system now operating, which ranks among the largest installations in operation, is shown in the illustration below.





Showing end view and S.K.F. bearings of 35-inch Blower and Exhauster, equipped with tight and loose special ball-bearing pulleys

TORONTO BLOWER SYSTEMS

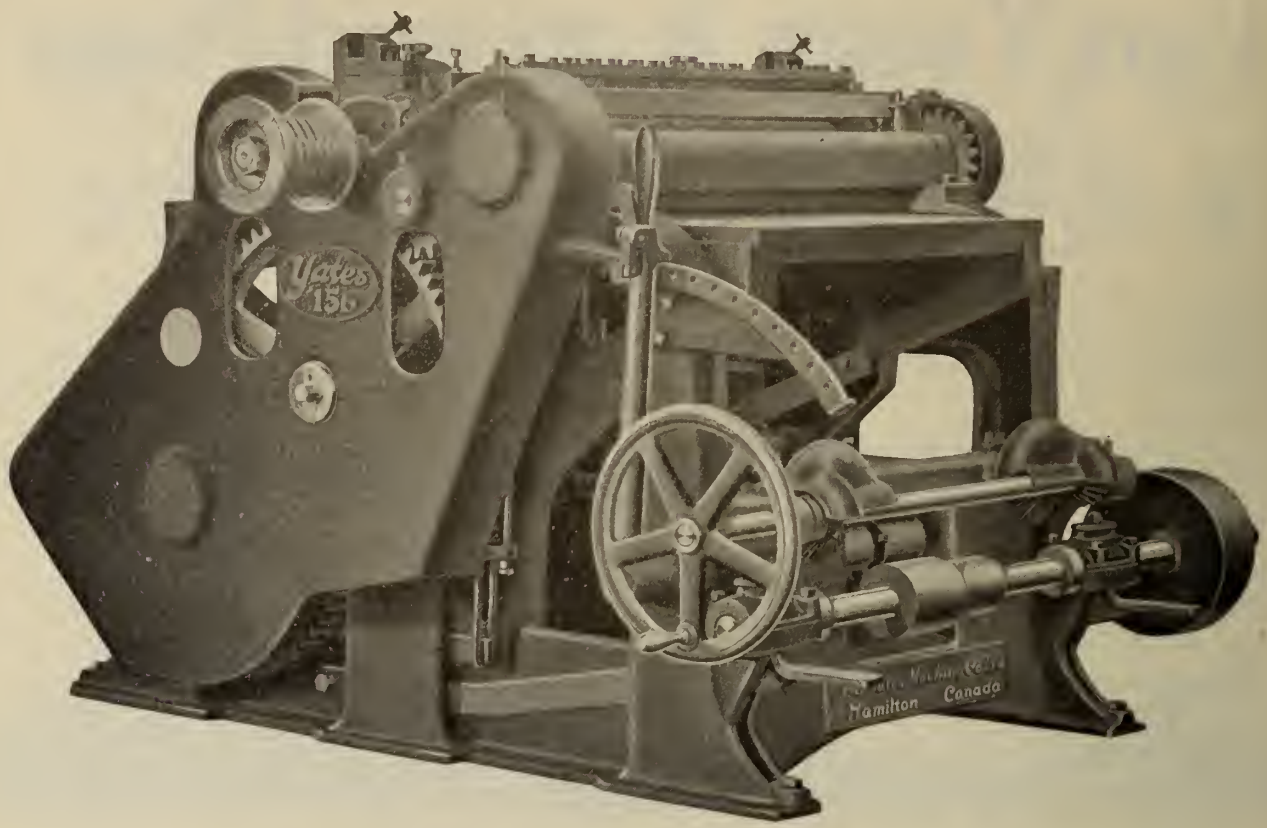
vary in size and type to suit each particular plant. All installations are made complete under the supervision of our experienced engineers. We assume the entire responsibility for their satisfactory operation.

Learn what a Toronto Blower System can do for YOUR mill or factory. They are economical and efficient, save time and labor, promote better working conditions and minimize the risk of fire from combustible materials.

Consult one of our experts about the cost of installation in your plant.

TORONTO BLOWER CO.

156 Duke St., Toronto



YATES

Ball Bearing Single Surfacer

Fitted with S.K.F. Ball Bearings. Round cutter head fitted with thin high speed steel knives.

Knives ground and jointed without removing from head.

Sectional roll and chipbreaker.

Investigate the merits of this machine—it will be worth your while.

P. B. Yates Machine Co. Ltd.
HAMILTON — ONTARIO

WORLD'S LARGEST MANUFACTURERS OF WOODWORKING MACHINERY

Lower Insurance Rates

Sturtevant collecting and conveying systems lower insurance rate in woodworking shops by keeping beams and rafters free from dust and shavings—two expensive fire hazards.

That saving alone justifies the installation. In addition, they clear the air of dust and grime which injure machinery—and cut lubrication costs besides.

Ask for folder 602 and start shop economies

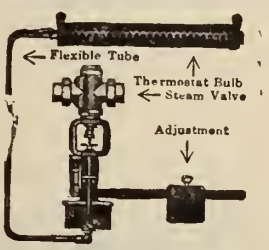
B. F. Sturtevant Company of Canada, Limited

Montreal - Galt Toronto

Sturtevant
PUTS AIR TO WORK

Measure Green Wood Costs By Kiln Output

Every inch of green wood represents two values — raw value and finished value. Don't allow fluctuating kiln temperatures to tamper with these values. Prevent fluctuating temperatures by equipping your kilns with Powers Heat Regulators.



The Powers Regulator No. 15

Specially designed to control temperatures in dry kilns, ovens, varnish and dry rooms,, etc. Requires no outside power for its operation.

As long as steam pressure is maintained Powers Regulators operate, thereby insuring correct kiln temperature; saving fuel by using only necessary heat; saving labor by releasing men from watching thermometers and valves; **saving material by cutting down the loss from case-hardening, warping and checking.**

Our knowledge of heat control problems, gained in more than thirty years of research and experience in this field, is freely at your service.

Write us Today

The Canadian POWERS REGULATOR Co Ltd
Specialists in Automatic Heat Control

106 Lombard Street — Toronto, Ont.

Calgary, Alta. Halifax, N.S. Montreal, Que.
Vancouver, B.C. Winnipeg, Man.

(2208)

Every Day in Every Way Our Machines

are becoming

Better and Better!

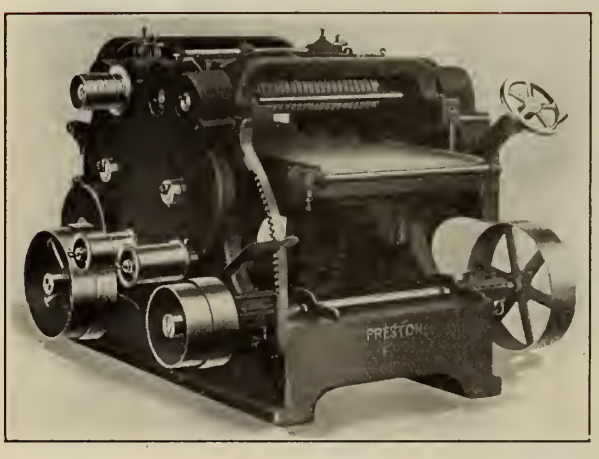
and it's no wonder because our whole waking hours are spent in endeavoring to improve them so that they will be

100% PERFECT

and give

100% SATISFACTION

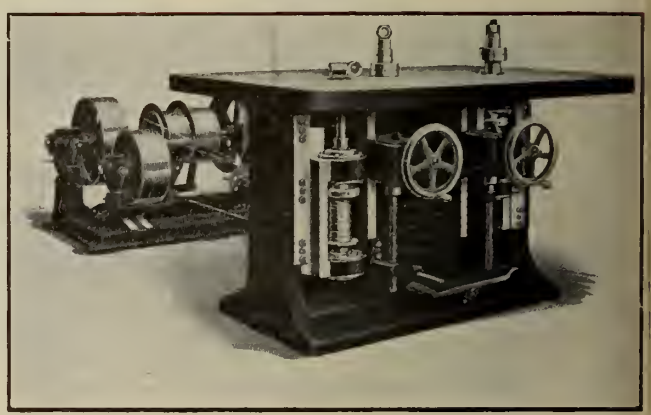
to our customer



No. 123 "Preston" High Speed Ball Bearing Surface Planer

This cut shows planer equipped with specially selected S.K.F. ball bearings, sectional roll and sectional chipbreaker, round cylinder with four high speed knives, and arranged to receive Stockbridge electric knife grinder and jointer. Cylinder speed, 5,000 R.P.M.

Two points are guaranteed: (1) It will reduce your sanding costs (2) It will increase your production.



No. 162 "Preston" High Speed Ball Bearing Shaper

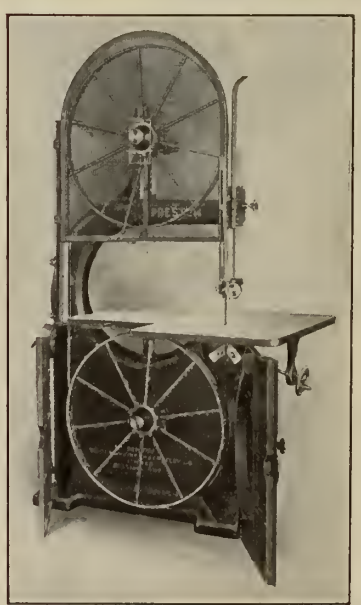
Guaranteed advantages over babbit bearing machine:—100% more work 100% better work. Made either single or double spindle. Detachable spindle tops. Specially selected ball bearings.

No. 132 "Preston" 36" Band Saw

Made with or without guards. The wheels are all steel, covered with solid rubber bands, ¼ in. thick. Solid web lower wheel is supplied when desired.

We guarantee that breaking of saws will be reduced to a minimum on this machine by reason of our almost perfect tension device and style of guide.

Supplied with 3 H.P. motor for individual drive if desired.

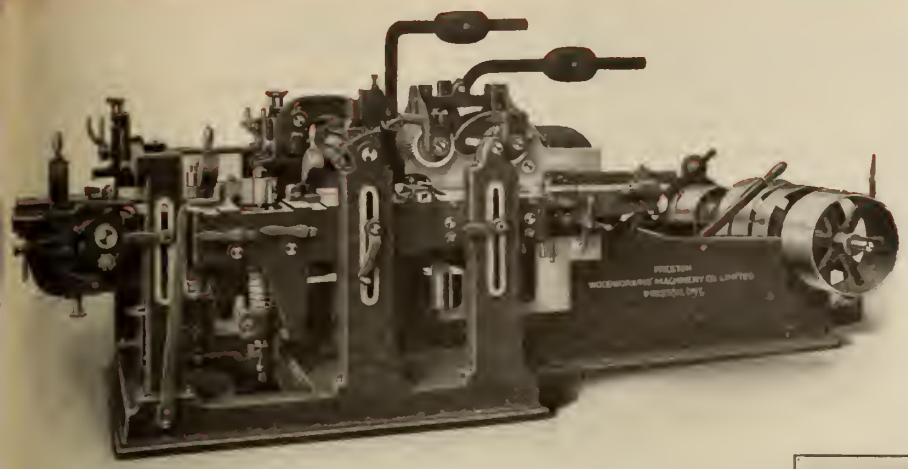


Specialists in Ball Bearing Woodworking Machinery

The Preston Woodworking

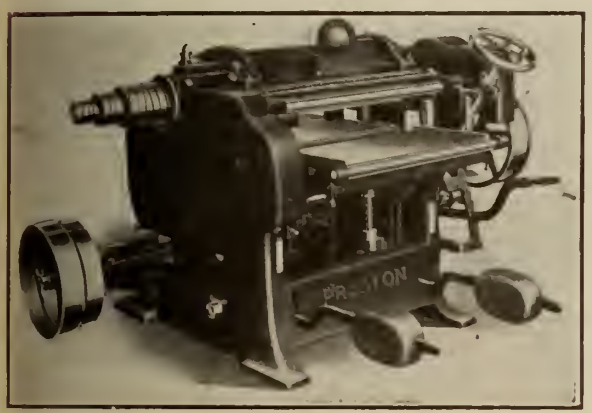
PRESTON, ONT.,

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw



No. 145 "Preston" Heavy Four-side Moulder on Base

To match 10", 12" or 13" wide. Table lowers 12". Has S.K.F. ball bearings for end thrust on side heads and is **equipped with** S.K.F. ball bearings throughout **when desired.**



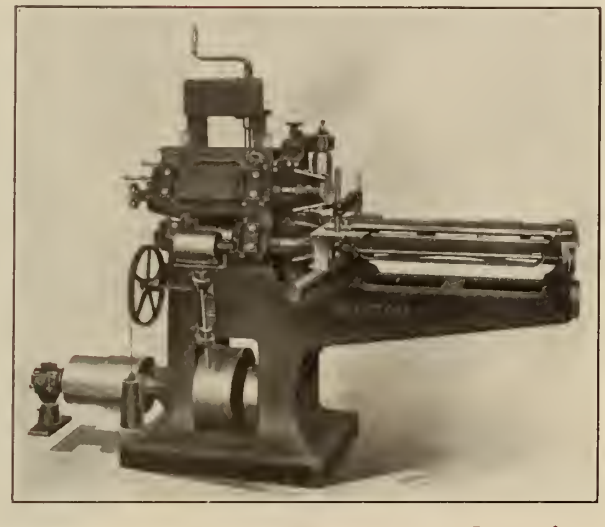
No. 121 "Preston" Heavy Pony Planer

This cut shows standard machine. Can be built with:

(1) Straight roll or divided rolls or sectional roll and chipbreaker.

(2) Square cylinder or round 4 knife cylinder.

(3) Babbit Bearings or S.K.F. Ball Bearings.



No. 184 "Preston" Tenoning Machine

Features of Construction

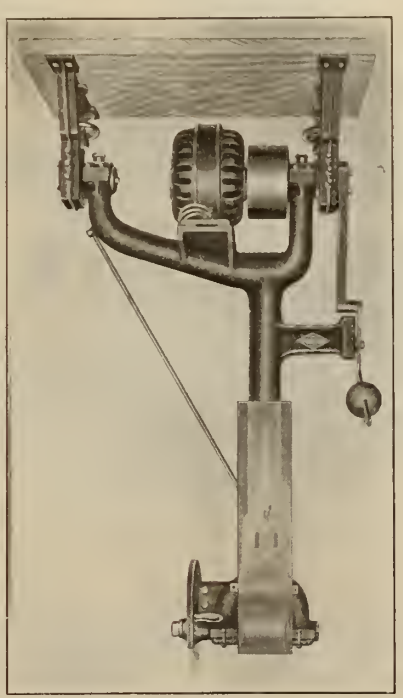
(1) Genuine Whitney self-lubricating bearings.

(2) Powerful belt drive.

(3) Large heavy base and very rigid in all parts.

(4) Practically all adjustments made from front of machine.

In this advertisement are illustrated a few of the standard tools we manufacture. Woodworking tools for any special purpose are also designed and produced by us. The illustrations of the machines are necessarily small, and the descriptions meagre, but we would appreciate an opportunity to send you detailed information and illustrations of any machine and to quote you on your requirements.



Our Motto

"SERVICE AND SATISFACTION"

No. 152 "Preston" Motor Driven Swing Cut Off Saw

Note belt guard. Built with special arrangement providing for use of an endless belt. Every requirement of a swing cut off saw is combined in this machine.

Machinery Company, Limited

CANADA

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

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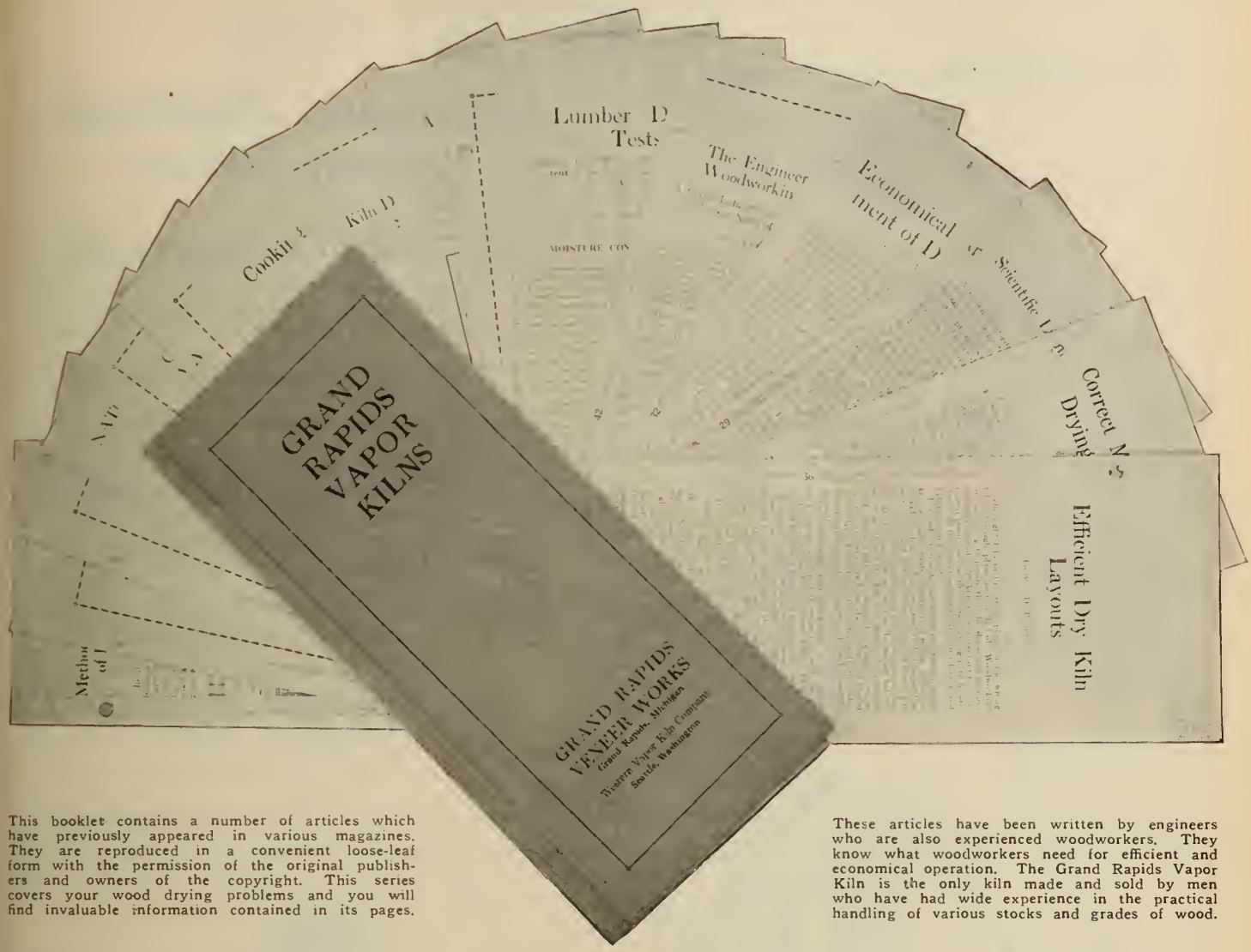

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These articles have been written by engineers who are also experienced woodworkers. They know what woodworkers need for efficient and economical operation. The Grand Rapids Vapor Kiln is the only kiln made and sold by men who have had wide experience in the practical handling of various stocks and grades of wood.

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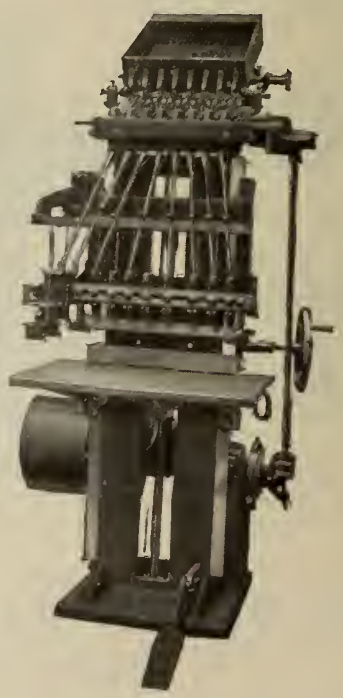

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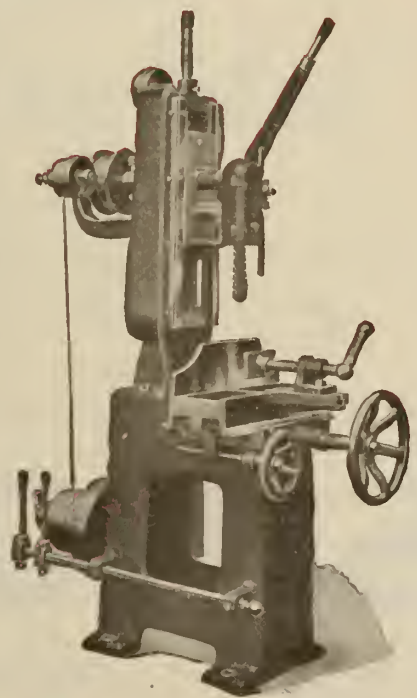

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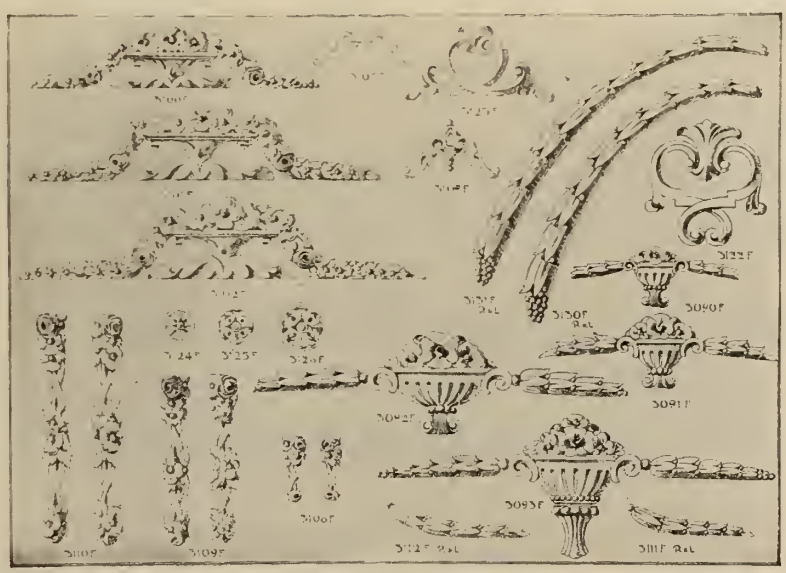

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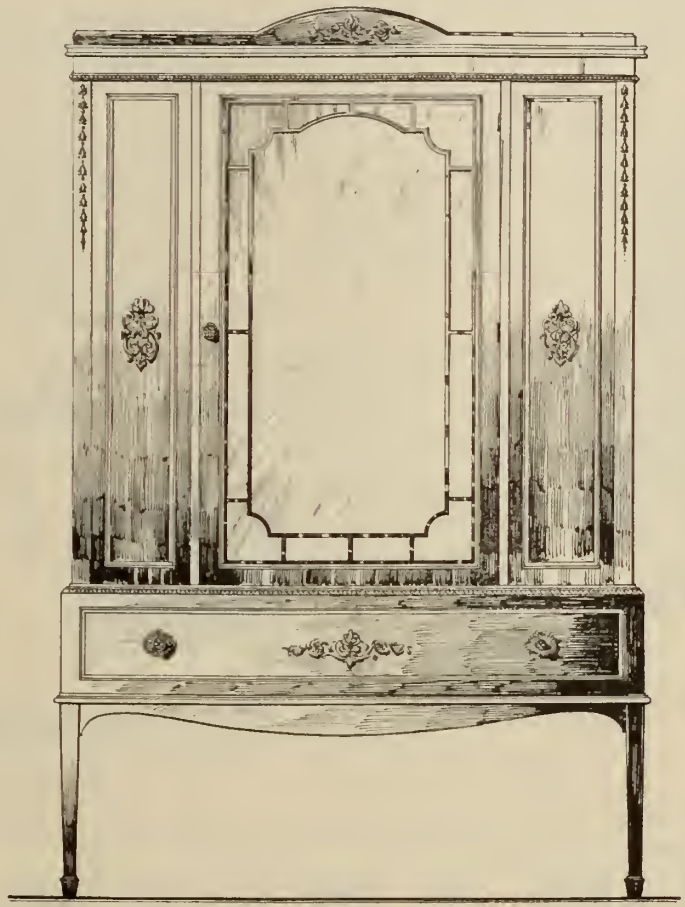

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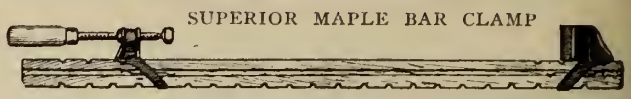

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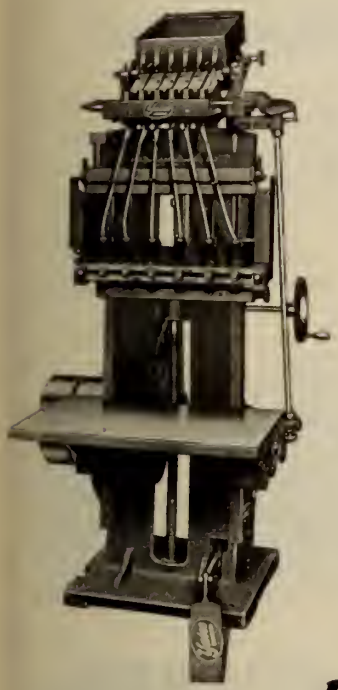

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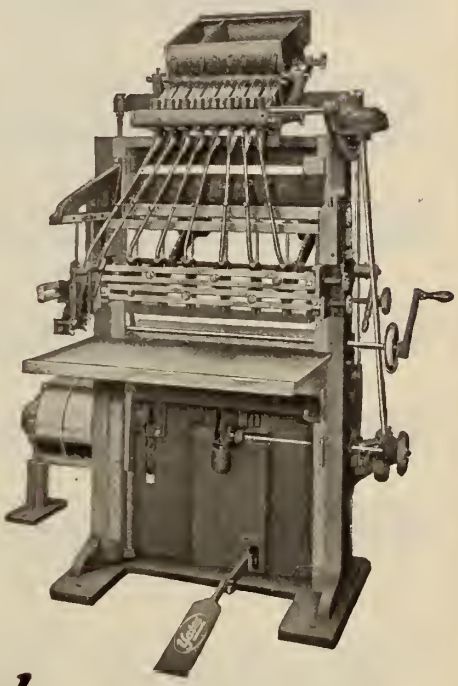

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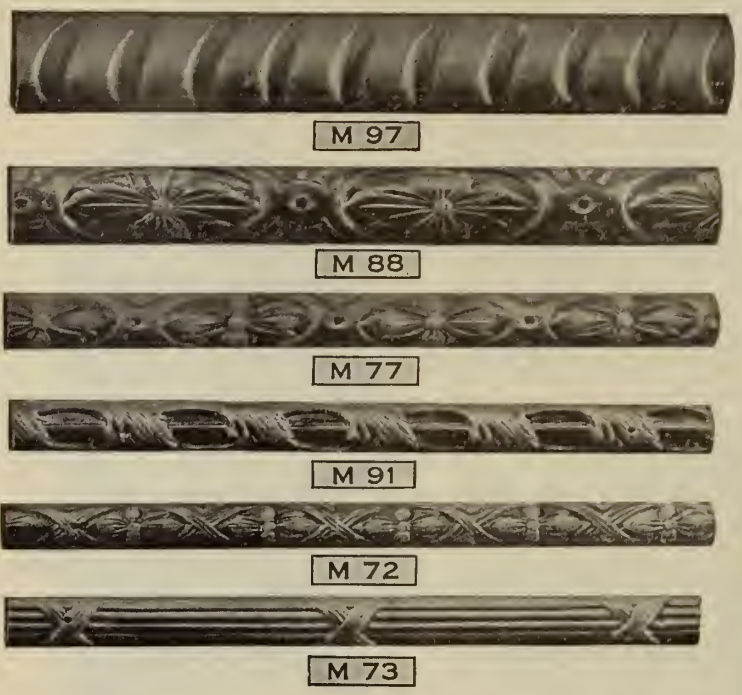

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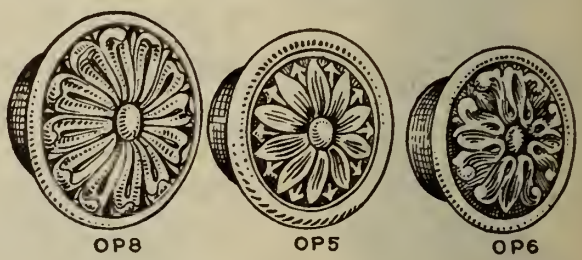

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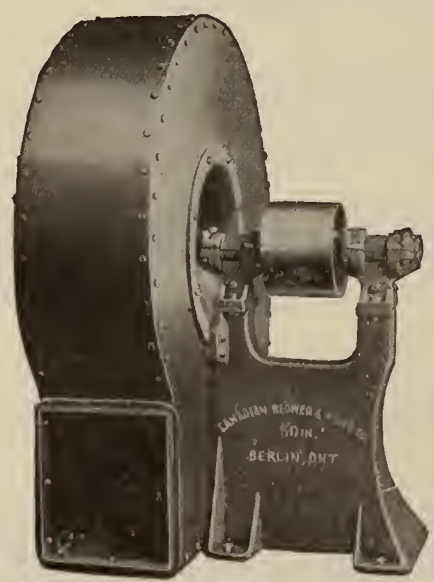

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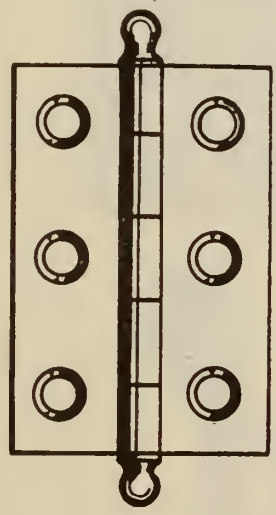

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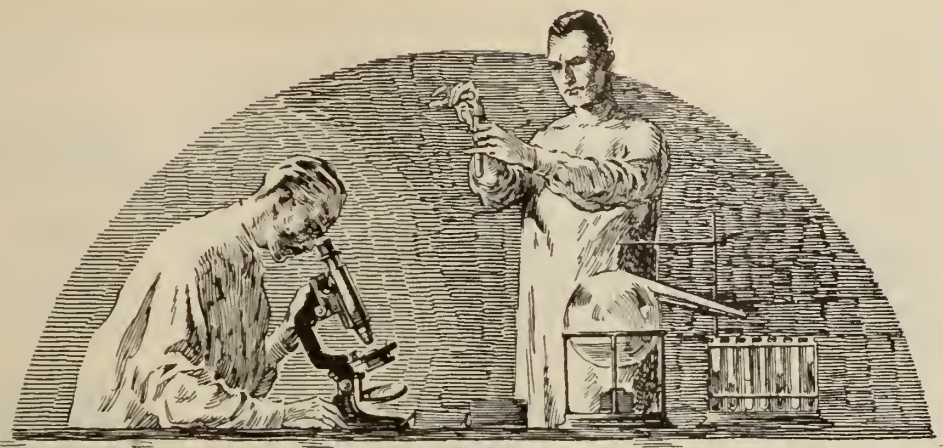

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Behr Quality Abrasives are absolutely dependable. Every lot of goods as it goes through the factory must conform to our one rigid standard adopted for it. Laboratory analyses of paper, cloth and glue, and careful grading and re-grading of the raw minerals, serve to insure their envied uniformity.

Millions of grains of exactly the same size, unvarying strength of backing and diligent care in application by machine operators who have become expert through many years' service, unite to produce the uniform excellence which has made Behr's Sandpapers the accepted standard of sandpaper values.

Workmen equipped with Behr Quality Abrasives can work with the satisfying feeling that the materials you give them are, year in and year out, of the same dependable uniformity in grade, backing, evenness of coating and lasting power as was the case when their fathers, and in some instances their grandfathers before them, used Behr's Sandpapers.

HERMAN BEHR & CO., Inc.

31-63 Tiffany Place Brooklyn, New York

Montreal, 81 Grey Nun Street Toronto, 361 Sorauren Avenue

Chicago · St. Louis · San Francisco · London · Grand Rapids · Boston

TABLE SLIDES TABLE RIMS TABLE PINS

Makers of—

The "Bruce Slide"

BRUCE WOODWORKERS, Limited, Chesley, Ont.

BIRCH

MAPLE, SPRUCE
HEMLOCK, FIR

CRATING

Southern and Canadian
Hardwoods

Will saw to order
600,000 feet
Choice
Birch Logs

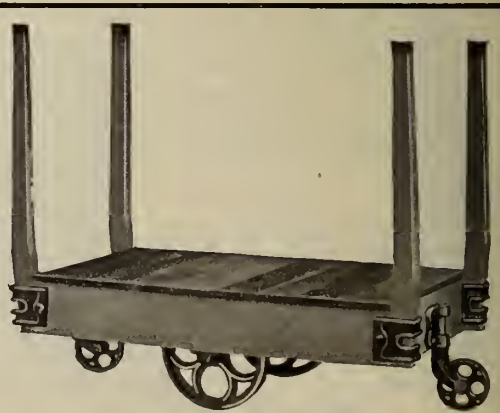
Percy E. Heeney
Kitchener, Ont.

FACTORY TRUCKS

Regular size 24 x 48.
Stakes 30 inches high.
Centre wheels 14½ in., diam., 2 in. face.
Steel stem castor wheel 6 1/4 in. dia., 1 1/4 in. face.
Weight 160 lbs.
Special sizes to order.

MANUFACTURED BY

P. E. SHANTZ, PRESTON, ONTARIO.



Factory Truck Style No. 26.

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods
White Pine, Spruce and Hemlock

With special attention to **Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.**

OUR MOTTO

REASONABLE PRICES—that you can afford to pay
EFFICIENT SERVICE — that you have a right to expect
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

STARK
The LAST WORD in QUALITY & SERVICE
K
BRAND

HARDWOODS
Oak, Ash, Gum, Poplar, Maple, Elm, Cottonwood, Sycamore.

CYPRESS
Lath, Lumber, Dimension.

VENEERS
Door Panel, Piano Rim, Cypress Battery Stock.

OAK FLOORING
"Chickasaw Brand"

Skill of Sidonian Hewers is now Easily Surpassed

The hewers of Sidonia displayed rare skill in finishing the cedars of Lebanon, but they were unable to attain the accuracy we get with our up-to-the-minute equipment. Furthermore, we employ the utmost care in manufacture and guarantee uniformity in width and thickness of all our

HARDWOODS - VENEERS
CYPRESS - OAK FLOORING

We load in either straight or mixed cars and our shipments are strictly up to grade. We are able to furnish you any item listed in the accompanying panel and can now supply a limited quantity of dry inch Plain and Quartered Red Gum, if you place your orders without delay.

James E. Stark & Company

INCORPORATED

MANUFACTURERS

General Offices:
MEMPHIS, TENNESSEE

Chicago Offices: 25 N. Dearborn St.

A Permanent Lumber Service

AFTER several years of inactivity we are now cutting on our modern fully equipped mills at Manistique and Little Lake, Upper Michigan. The timber behind these mills was purchased many years ago by the Stack interests from the then "unlimited" supply. Its quality, particularly the maple and birch, is the envy of northern mill men among whom this tract is famous.

This timber will run the mills to full capacity for fifteen to twenty years. The 40,000,000 feet annual cut will run:

15,000,000 ft. maple annually
6,000,000 ft. birch annually
2,500,000 ft. beech annually
2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually
the balace in Spruce and Tamarack.

Our exceptional service, grades, and manufacture will be maintained. "Low freight rate shipments by water to Toronto, Montreal, Owen Sound, Port Arthur, and other Great Lakes and St. Lawrence River Ports. Conveniently located also for rail shipments to inland points by the C.P.R. or Soo line."

We will be pleased to hear from old friends and from new ones who can understand and appreciate what permanent connection with such a source of supply would mean.

STACK LUMBER CO.
ESCANABA MICHIGAN

Southern Hardwoods

MISSISSIPPI DELTA GUM
The Best That Grows

OUR mills are producing some beautiful stock at the present time, and we can assure prompt delivery in any quantity.

Plain and Quartered Red and Sap Gum, Plain and Quartered White Oak, Plain Red Oak, Cottonwood, Cypress, Ash, Elm.

Write for prices and full particulars

MISSISSIPPI VALLEY HARDWOOD CO., INC.

Bandmills: Memphis, Tenn., Clarksdale, Miss.
Sales Office: Memphis, Tenn.
MISSISSIPPI DELTA GUM The Best That Grows

BOOKS FOR SALE

The following books are offered at special prices subject to previous sale:

"Chip Carving" by Harris W. Moore, published in 1922 by The Manual Arts Press, 46 pages, fully illustrated. Price 85c.

"Machine Molder Practice," recently published by the Practical Books Co. 172 pages, 100 illustrations. Flexible leather binding. Price $3.00.

"The Utilisation of Wood-Waste," by Ernest Hubbard, Third English revised and enlarged edition, 236 pages, illustrated. Published in 1920 by Scott, Greenwood & Son. Price $2.00.

"The Kiln Drying of Lumber," a Practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J B. Lippincott Co. 316 pages, illustrated. Price $5.00.

Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price $3.00.

"Modern Practical Joinery,"—A comprehensive treatise on the practice of joiner's work by hand and machine. For the use of Workmen, Builders, Machinists and Architects. Containing a full description of drawing instruments and their use; tools, appliances and apparatus; methods and processes; joints and fastenings; woodworking machines; machine shop practice; preparation of work for machining; use of the steel square; house joinery, bank, office, church, museum, domestic and shop fittings, show cases, air-tight cases, splayed and shaped work; new materials and method, stairbuilding, foremen's work, fixing, and a description of nearly 150 woods suitable for joinery. Together with a comprehensive glossary and index. By George Ellis—fourth edition, extensively revised and much enlarged. With upwards of 1400 illustrations, including 20 double page and 41 photographic plates. Recently published by B. T. Batsford Limited, 570 pages. Price $12.50.

Woodworker Publishing Co., Limited
345 Adelaide Street West, Toronto, Ont.

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

Memphis - Tenn.

We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK

3	cars	4/4"	Fas.
5	"	4/4"	No. 1 Common.
1	"	4/4"	No. 2 Common.

PLAIN WHITE OAK

2	cars	4/4"	Fas.
2	"	5/4"	No. 1 Com. & Btr.
3	"	4/4"	No. 1 Com. & Sel.
3	"	4/4"	No. 2 Common.

QUARTERED RED OAK

3	cars	4/4"	Fas.
6	"	4/4"	No. 1 Common.
2	"	4/4"	No. 2 Common.

PLAIN RED OAK

2	cars	4/4"	Fas.
3	"	5/4"	Fas.
3	"	6/4"	Fas.
2	"	8/4"	Fas.
8	"	4/4"	No. 1 Common.
2	"	5/4"	No. 1 Common.
2	"	6/4"	No. 1 Common.

QUARTERED RED GUM

2	cars	4/4"	Fas.
2	"	4/4"	Fas. Fig.
2	"	5/4"	Fas.
2	"	6/4"	Fas.
10	"	4/4"	No. 1 Common.
2	"	5/4"	No. 1 Common.
2	"	6/4"	No. 1 Common.

QUARTERED RED GUM S.N.D.

5	cars	5/4"	No. 1 Com. & Btr.
5	"	6/4"	No. 1 Com. & Btr.
10	"	8/4"	No. 1 Com. & Btr.

ASH

4	cars	10/4"	No 1 Com. & Btr.
2	"	12/4"	No. 1 Com. & Btr.
1	"	6/4"	No. 1 Com. & Btr.
2	"	4/4"	No. 1 Common.
2	"	4/4"	No. 2 Common.
2	"	5/4"	No. 1 Com. & Btr.

SAP GUM

8	cars	4/4"	Fas.
3	"	5/4"	Fas.
3	"	6/4"	Fas.
15	"	4/4"	No. 1 Common.
8	"	4/4"	No. 2 Common.
5	"	5/4"	No. 1 Common.
5	"	6/4"	No. 1 Common.

COTTONWOOD

2	cars	4/4"	Fas.
6	"	4/4"	No. 1 Common.
3	"	4/4"	No. 2 Common.

ELM

2	cars	4/4"	Log Run.
2	"	5/4"	Log Run.
1	"	8/4"	Log Run.
6	"	10/4"	Log Run.
6	"	12/4"	Log Run.

Buffalo Hardwood Lumber Co. J. B. Wall, Pres't M. M. Wall, Treas. T. H. Wall, V-Pres't.
940 Seneca Street
We specialize in—WHITE ASH, OAK AND MAPLE

BUFFALO *"Buy and Sell Hardwood in this Market."*
FAMOUS LUMBER CENTER
Unequalled facilities for rapid dispatch, by Rail, Lake or Barge Canal, on all your requirements, large or small.
SUPPLYING THE HARDWOOD NEEDS OF THE NATION

ATLANTIC LUMBER COMPANY
HARDWOODS
Our Specialty—West Virginia and Pennsylvania Cherry
West Virginia Soft Red and White Oak. 1055 Seneca Street

BLAKESLEE, PERRIN & DARLING
A complete stock of seasoned Hardwoods
Including Ash, Basswood, Birch, Cherry, Chestnut, Cypress, Elm, Gum, Hickory, Maple, Plain and Quartered Oak, Poplar and Walnut.
1100 Seneca Street

T. SULLIVAN & COMPANY
NORTHERN
Gray Elm and Brown Ash
Niagara Street Corner Arthur

FRANK T. SULLIVAN
Specialties
Cherry, Walnut and Pacific Coast Woods
Main Office: 600 Ellicott Square. Yard: 2598 Delaware Ave.

1" to 4 No. 1" Common and 1s & 2s **HARD MAPLE**
Excellent widths and lengths.
Can kiln dry and surface.
G. Elias & Bro., Inc. Elk Street to the Buffalo River **Buffalo, N. Y.**

YEAGER LUMBER CO., INC.
Our Specialities
Oak Poplar Ash Maple
932 Elk Street

MILLER, STURM & MILLER
Hardwoods of All Kinds
1142 Seneca Street

STANDARD HARDWOOD LUMBER CO.
Hardwoods
Prompt Shipments—from Buffalo Yards or from Mill direct to you
8,000,000 feet Dry Stock on Hand. 1333 Clinton Street

Taylor & Crate Hardwoods of All Kinds
A stock of 18,000,000 to 20,000,000 ft. of Hardwoods carried at all times at our big Buffalo yards.
RAIL AND CARGO SHIPMENTS
Established 56 Years 2101 Elmwood Avenue

HUGH McLEAN LUMBER CO.
HARDWOODS OF ALL KINDS
Our Specialties—Quartered White Oak, Plain and Quartered Gum
940 Elk Street

Why you can depend upon Long-Bell Hardwoods

Modern methods in manufacture

Logs from our own virgin forests.

Each log selected and cut for the purpose for which it is best adapted.

Class of timber producing excellent widths and lengths.

Manufactured in our own Hardwood Mills, equipped with modern band machinery.

Manufacture supervised by experienced hardwood men.

Thoroughness given every detail of manufacture.

Particular care given to uniformity of thickness—carefully edged, equalized and trimmed.

End-butted with mitre toothed saws.

Carefully sorted at chains.

Drying yard arranged to give thorough circulation to stocks in pile.

Every detail in sticking and drying carefully observed to insure best results.

Experienced inspectors grade lumber for shipment.

Double check inspection at cars in loading to insure uniform grades.

Same care exercised in loading in car as in manufacture.

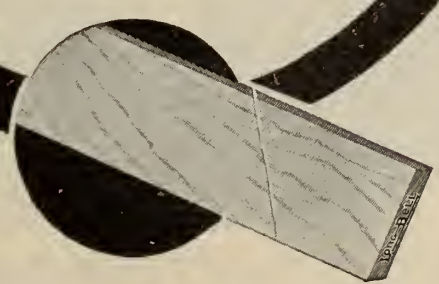
Easily identified by the Long-Bell trade-mark on the end of the board.

Long-Bell trade-marked Hardwoods are manufactured in our own Hardwood Mills exclusively, with modern band machinery.

Experienced hardwood men supervise the manufacture, insuring thoroughness in every detail of millwork.

Particular attention is given to uniformity of thickness; it is carefully edged, equalized and trimmed.

These modern methods in manufacturing contribute materially to the dependability of Long-Bell Trade-marked Hardwoods.



The Long-Bell Lumber Company

R. A. LONG BUILDING Lumbermen since 1875 KANSAS CITY, MO.

We Want to Sell

1 car 4/4 1 & 2's Chestnut.

2 " 4/4 1 & 2's Plain Red Oak.

1 " 5/4 10" and wider White Oak. Step Plank.

3 " each 4/4 & 8/4 No. 1 Common & Selects Quartered White Oak 18 Months Dry.

2 " 4/4 1 & 2's Yellow Poplar Straight or Mixed Cars Band-Sawn, Soft Textured.

We operate our own Band Mill, Dry Kilns, Planers and Resaws.

Louisville Point Lumber Co., Inc.

1144 Fulton St. - Louisville, Ky.

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Ply Wood Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

STRONG GLUE
means
STRONG JOINTS

The most critical Woodworkers have used DUNN'S GLUES for nearly Half a Century.

Uniform Shipments Guaranteed

Let us solve your glue problems. Our Service Department is at your disposal and places you under no obligation whatsoever.

Free working samples upon request.

THOMAS W. DUNN CO.
of Canada Limited
P.O. Box 672 MONTREAL, P.Q.

THURN-MAXSON
Lumber Company
SOUTH BEND, IND.

Owners of Chas. O. Maus Lumber Co.

Everything in Hardwoods

We Specialize in—
OAK—White and Red—Plain and Quartered.
GUM—Red and Sap—Plain and Quartered.
CYPRESS—Genuine Gulf Red and Soft Yellow.

We Feature—
High Grades and Service Satisfaction Guaranteed

WRITE OR WIRE US FOR PRICES.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

Mills Coal Grove Ohio
General Offices: 33 Rector St. New York City

From Missouri?

WALNUT

We will not tire you with a long article on the merits of our Veneers.

All Ads read just about alike—stressing **course of supply, quality of product, complete stocks, prompt shipments, courtesy of service, etc.**

We, too, could say all that and then some, but we won't.

Talk's cheap. We've got the goods.

WALNUT

STUMPS

BACK CUT

HALF-ROUND

ROTARY

SLICED

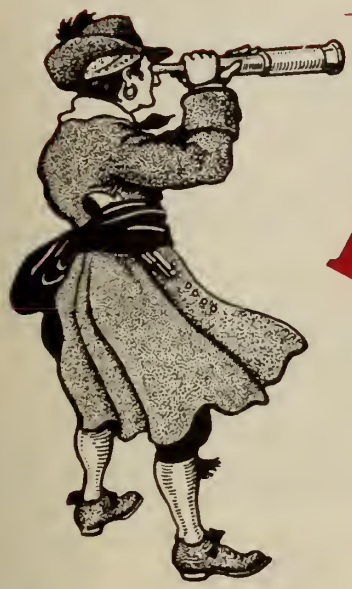
WALNUT

Let Us Show You

GEO. W. HARTZELL, PIQUA, O.

WALNUT SPECIALISTS

If you are looking for the unusual —in Hardwoods



Try

PEDWELL

PEDWELL Since 1883 Service to Hardwood Users

The PEDWELL HARDWOOD LUMBER CO.

Office and Yard: Foot of Spadina Ave. - - TORONTO

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

TENNESSEE SCENTED CEDAR

1 in.	46,000
1¼ in.	1,500

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	36,000	7,500	133,000	232,000
1¼ in.	25,000	.....	6,000	12,000
1½ in.	3,200	.....	3,000	104,000
2 in.	7,000	.....	22,000	63,000
2½ in.	4,500	.....	4,300	3,000
3 in.	21,700	.....	4,500	4,000
4 in.	9,300	.....	900	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,600	.....	3,000	.....
1 in.	114,000	.....	184,000	57,000
1¼ in.	8,000	1,800	24,000	12,000
1½ in.	17,700	2,600	88,000	27,000
2 in.	2,000	.....	3,000	54,000
2½ in.	2,000	.....	.....	.....
3 in.	1,300	.....	.....	.....
4 in.	1,500	.....	300	.....

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
5/8 in.	17,000	7,000	15,900	3,000
¾ in.	55,000	173,000	6,000	26,000
1 in.	102,000	34,000	21,200	65,000
1¼ in.	50,000	7,600	.....	.....
1½ in.	33,000	35,000	400	1,500
2 in.	24,000	57,000	7,000	12,000
2¼ in.	3,200	3,200	.....	.....
2½ in.	123,000	44,000	2,000	1,800
3 in.	23,000	19,000	.....	.....
3½ in.	4,500	3,000	.....	.....
4 in.	25,000	17,800	.....	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	.....	.....	.....
¾ in.	3,900	.....	6,300	3,000
5/8 in.	2,800	.....	700	800
1 in.	12,000	4,300	65,000	3,700
1¼ in.	12,000	27,300	59,000	5,800
1½ in.	4,000	500	27,500	200
2 in.	1,500	.....	21,000	5,700
2½ in.	.....	.....	.....	.....
3 in.	.....	.....	.....	.....
4 in.	600	.....	200	.....

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	51,000	191,000	.....	.....
5/8 in.	.....	74,000	.....	400
1 in.	107,000	8,000	500	50,000
1¼ in.	51,000	69,000	9,000	2,100
1½ in.	57,000	75,200	5,000	500
2 in.	64,000	112,000	26,000	5,000
2¼ in.	1,500	1,400	.....	.....
2½ in.	94,000	33,000	.....	.....
3 in.	24,800	22,000	7,000	12,000
4 in.	4,600	4,600	.....	.....

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,700	.....	5,700	500
1 in.	13,300	5,400	9,000	1,400
1¼ in.	5,900	.....	2,900	.....
1½ in.	700	.....	4,000	.....
2 in.	.....	.....	7,400	.....

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	.....	4,500	18,600	2,500
1¼ in.	14,400	15,000	2,000	9,000
1½ in.	.....	1,800	11,200	3,000
2 in.	8,100	7,400	300	4,700
3 in.	.....	.....	.....	300

QUARTERED SAP GUM

	1 & 2	No. 1C	No. 2C
4/4	.....	1,800	.....
5/4	.....	9,000	.....
8/4	.....	18,000	13,800	300
10/4	.....	5,000	.....	.....
12/4	.....	300	.....	300

POPLAR

	1 & 2 18" up	1 & 2	No. 1 Com.	Bright Saps
¾ in.	.....	.....	700	200
5/8 in	1,500	26,000	36,100	14,900
1 in.	.....	69,000	66,900	700
1¼ in.	2,300	5,000	54,000	3,000
1½ in.	5,300	18,000	19,000	37,000
2 in.	.....	9,300	23,000	10,800
2½ in.	.....	4,000	.....	14,800
3 in.	.....	3,600	10,000	21,000
4 in.	.....	6,000	4,500	9,200

Also Large Stocks of Ash, Basswood, Beech, Birch, Hard and Soft Maple.

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. **Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY**

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE, LA.

Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

BEDNA YOUNG'S
SOUTHERN
HARDWOODS

The quality and saleability of your furniture depends primarily upon your selection of hardwoods, for without good material the finest craftsmen are helpless. Play safe—always choose Bedna Young's hardwoods. Fine, figured, quartered oak a specialty.

BEDNA YOUNG LUMBER CO.

Jackson, Tennessee

From Old Kentucky

The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

Ash, Oak, Gum, Poplar, Hickory, Walnut, Chestnut, Beech, Maple, Elm, Sycamore, Cottonwood. Quotations promptly.

J. V. STIMSON & CO.
Owensboro - Kentucky
Bandmills: Owensboro; Campbellsville, Kentucky

Mercereau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

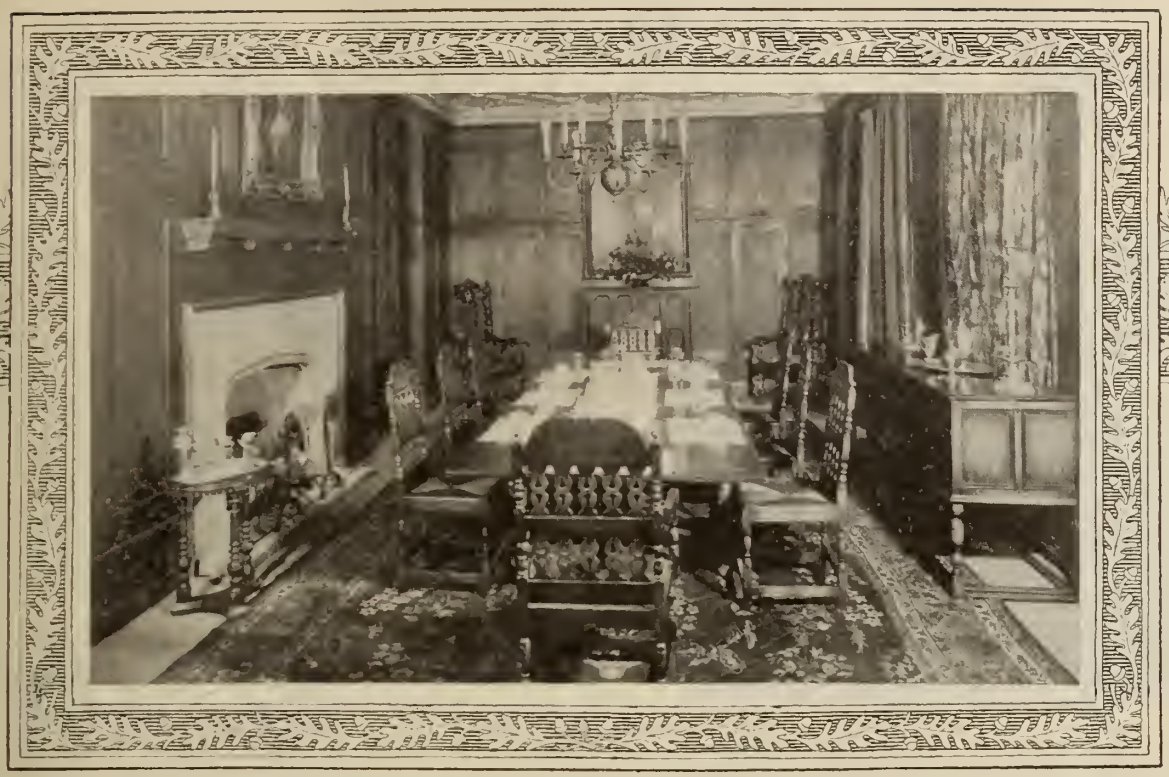
West Virginia and Southern
HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS
Vice President and Manager of Lumber Dept.



As demonstrated by its use in the suite shown above, oak is readily adaptable to good design and attractive finish.

Further Assurance of Quality

One important step taken to insure delivery of our hardwood lumber in the most excellent condition, is the elimination, as far as is humanly possible, of the checking of thick stock.

This is accomplished by sawing thick lumber during the season when it is least susceptible to checking. Immediately after being sawed, it is carefully piled where drying conditions are most favorable to heavy stock. The ends and occasionally the sides of piles are boxed to prevent too rapid drying. Furthermore, each pile is roofed for protection against the elements.

The unusual precaution exercised in the care of our lumber as well as in its manufacture is one of the primary reasons for the superiority of our hardwoods for general manufacturing purposes.

Consult our representative or write us for particulars.

W. M. RITTER LUMBER COMPANY

Largest Producer of Hardwood Lumber—Annual Capacity—130,000,000 Feet

General Offices **COLUMBUS, OHIO**

RITTER

APPALACHIAN OAK

Attention:
Mr. Hardwood Buyer

Signs of Spring

Building permits issued in January of this year exceeded in amount those of any previous January on record. This means that when the buildings for which these permits were issued get under way, there will be an unprecedented demand for *Building Materials.* It means that when these buildings are completed, there will be an unprecedented demand for *Furniture* and *House Furnishings.* At the present time, the Building Trades and the Furniture Manufacturers are among the largest consumers of Lumber in this country. Prosperity for them means increased demand for *dry Hardwood Lumber.* Think it over, Mr. Hardwood Buyer, and for prompt quotations wire:

Chapman & Dewey Lumber Co.

Manufacturers
Hardwood Lumber and Box-Shooks
MEMPHIS, TENNESSEE

Mills and Factory:
Marked Tree, Ark.

Branch Office:
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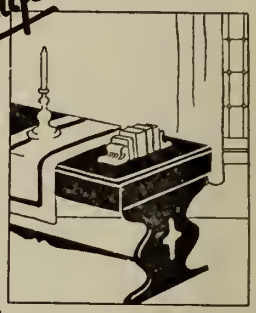

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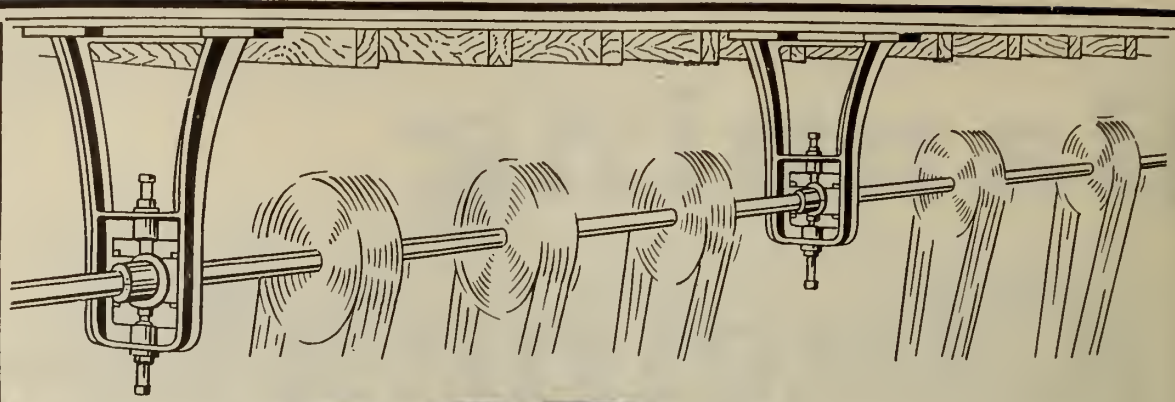

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Millmen and Architects

Just a few weeks ago nearly 300 representatives of the woodworking industry convened in Chicago for the ninth annual meeting of the Millwork Cost Bureau, which from many points of view was an event of outstanding importance and notable achievement. No apology need be offered for referring in a comment of the kind to the work of the Millwork Cost Bureau. To those who are acquainted with the remarkable accomplishments of this organization in the past, it is unnecessary to address any outline of its activities but to those who may not have come within the spell of its influence and service it may be said that the Bureau has, in the eight years of its existence, been a tremendously powerful factor in clarifying the practices of the millwork business, standardizing its methods and educating its personnel—in short, improving the whole status of the industry. In the past year alone the work which has been accomplished has been stupendous—the training of estimators, nearly a thousand of whom are enrolled, the supervision of cost recording service, the installation of cost systems and many other details that are of the utmost service to millmen.

Even remarkable as these achievements are, there is still more to accomplish and if we are to judge rightly the tenor of Mr. Didesch's address at the annual meeting, more will be accomplished. In Mr. Didesch's capacity as technical director of the Bureau he has had an unexcelled opportunity of investigating the needs of the industry and therefore his comments are worthy of close thought. His address to the members of the Bureau was full of meat, so much so that in the limited space of a comment like this it is impossible to refer adequately to all the points he dwelt upon. We cannot forget, however, the ideas he develops and because of their importance it will not be out of place to discuss them in detail in future issues.

In the meantime to get down to a specific basis of discussion we shall take one subject which Mr. Didesch considered—a topic that vitally affects every millman—the related shortcomings of architects and millmen. In telling the story let us use Mr. Didesch's own words, for they express the idea very clearly and succinctly. An abstract of his remarks therefore follows:

Because of the architect's lack of a proper appreciation of the manufacturers' requirements, the millwork industry has lost annually tens of thousands of dollars—perhaps I should add a cipher and call it hundreds of thousands of dollars. Think of the numerous times that each of you has been burnt, and repeatedly in the same place, because your estimators took a chance on a conventional ¼-inch scale drawing that, when compared with the subsequent working details, no more described the nature of the construction than the word 'bellyache' describes 'appendicitis' or 'ulcerated stomach.' And the astounding thing is that apparently you enjoy it—this process of being burnt. At least an outsider would so conclude, for if you wish the condition corrected, why not set about doing it? Why rant and tear your hair and proclaim to the world that you are misunderstood and abused and that all architects are either 'saps' or 'crooks' or both, and that you alone of all the industrial world have enormous difficulties to contend with?

"Architects as a class are a very ethical lot and such impressions must be eradicated. The chief reason why architects have misunderstood your needs is because heretofore there has never been an attempt to lay your difficulties before them, or to have you learn something of their troubles with millwork—they have their share just the same as you have yours. Millwork is a business in itself, a business of which architects cannot be expected to have more than a superficial knowledge. You are hardly equipped to take over their tasks, so why assume them to be specially fitted to handle yours? The things that they should know of your business can be taught them only through your own efforts, and if you will lay before them a carefully prepared schedule of your requirements, it seems certain that they will welcome it with open arms. Make it a concerted effort, and a definite one, and half the task is performed. Moreover, if any architects should then entertain the slightest doubt over the sincerity of your efforts, and by their retention of the phrase, 'details will follow' indicate that they doubt it, an emphatic stand by each of you who encounters those beguiling words and other shortcomings, will achieve the desired results."

Great Britain Offers Profitable Market

Canadian Manufacturers of Wood Products Can Readily Dispose of Many Lines Provided They Make a Thorough Study of Overseas Requirements and Produce Accordingly

By J. E. Ray*

So frequently has the attention of Canadian manufacturers been drawn to the vast market for manufactures of wood existing in all parts of the United Kingdom, that the following notes on the subject may contain little that is new beyond a description of the present condition of supply and demand. However, no apology should be necessary for reiterating a theme still holding promise of substantial benefits to the woodturners of Canada. Of course, every one is familiar with the obstacles confronting Canadian manufacturers, such as the keenness of competition, the disparity between the freight rates from Canada and those from Scandinavia, the chief source of competition, and also the scarcity of certain woods indispensable to the manufacture of certain kinds of woodenware. But the obstacles are not so formidable as to be insurmountable. Canadian makers can get into the market on many lines by utilizing the latest machinery available, and by producing in such large quantities as will enable them to base their profits upon a much finer margin than is possible upon small and spasmodic shipments.

Various Manchester houses have for several years past imported manufactures of wood from Canada, such as washboards, clothes pins, mangle rollers, pails, churns, handles, fibre wood, blind rollers, dowels, skewers, etc., and success in these lines should encourage the woodturners to investigate the possibilities of extending their operations in other directions.

The following commodities are enumerated to illustrate a few of the articles of wood which the writer thinks worthy of reconsideration by Canadian manufacturers.

Various Tool Handles

Hammer and Sledge.—These handles are usually made of hickory, the United States product being very popular. At the same time large quantities of hammer handles made of ash are in demand which range in size from 12 to 20 inches, and are sold wholesale at the present time at 12-inch, 1s. 4d. per dozen, rising upwards from 1d. to 3d. per inch.

The sizes of the hickory sledge handles are 24-inch, 30-inch, 36-inch and 42-inch, the present landed price being 9s., 10s., 11s. and 13s. respectively per dozen.

Hay and Manure Fork.—These are invariably of ash, and are produced at home as well as being imported from the United States, and to a lesser degree from Sweden. The sizes of the former run in half feet from 4 feet to 8 feet with diameters 1⅜ inches, 1½ inches and 1⅝ inches. The sizes of the latter are 4 feet, 4½ feet and 5 feet, diameters 1½ inch. The c.i.f. prices of American hay forks are: 4 feet, 4s. 6d.; 4½ feet, 5s.; 5 feet, 5s. 9d.; 5½ feet, 6s. 3d.; and 6 feet, 7s. per dozen.

The hay fork handles are straight, while the manure fork handles may be straight or bent.

Rake and Hoe.—These handles are straight and range from 4 feet (rising by six inches) to 6 feet, and 1⅛ inches in diameter, with turned ends.

Navvy Pick.—These handles are made of hickory (sometimes of maple), the lengths being 36-inch, 39-inch and 42-inch. Prices for American hickory are c.i.f. Liverpool 11s. 4d. per dozen for the first size, 12s. 6d. for the second, and 13s. 6d. for the third size.

Hatchet and Axe.—There are two kinds of hatchet handles sold, English ash and American hickory. The sizes of the former range from 12-inch to 24-inch, and the latter from 14-inch to 24-inch.

Fawn foot axe handles are of hickory and run in sizes from 30-inch to 36-inch. The United States is the main source of supply.

Spade, Shovel and Manure Fork Trees.—The designs of these trees vary, being straight or bent stems, and straight or eyed handles. The straight-eye trees are either 30-inch or 32-inch, and the bent are usually of the same length. The bent-footeye trees are 28-inch long, while the straight or bent crutch trees are 30-inch and 32-inch. Crutch socket trees are from 24-inch to 30-inch long.

Practically all of the above are made of ash, and are produced at home as well as being imported from the United States and Sweden.

It has not been possible to obtain full particulars of current prices in all the above lines, the importers interviewed contending that if Canadian manufacturers have anything to offer they should submit their prices independently of competitors' prices.

Brush and Broom.—Broom handles are now being imported from Canada, so that no comment is necessary beyond stating that some makers insist upon offering unturned ends, which are not saleable in this district.

With regard to brush handles, it would seem that Canadian manufacturers might study British designs more closely. Enormous quantities are sold, and although the cost of domestic production are cut very fine, it should not be concluded that Canada is shut out of the market. They are all made from an acceptable clean white wood, and run in sizes that are quite familiar in Canada.

The usual sizes and types of whitewash brush handles are also in demand and are made from sycamore or birch.

Brush Backs (Stock) in Demand

On several occasions in the past, attention has been drawn to the enormous quantities of brush backs annually consumed by the brush manufacturers of the United Kingdom. Firms interviewed in Manchester on the subject would be willing to give Canadian woodturners the preference if quality and prices were competitive,

Although very large quantities are turned at home, still larger supplies are imported from Norway, Sweden, and Finland, especially the stocks (backs) for household brooms and strong bass brushes. It is realized that the cheaper labor obtainable in the coun-

*Canadian Trade Commissioner, Manchester, Eng. A report made to the Department of Trade and Commerce, Ottawa.

tries cited constitutes a handicap to Canadian manufacturers. Nevertheless until the latter have gone carefully into their own costs of production and compared their c.i.f. Great Britain prices with those of their competitors they cannot know whether business is possible or not.

Sizes and Current Prices.—The broom stocks required are from 11-inch to 13-inch, rising by ½-inch from the former size. The 11-inch stocks would have to be delivered to buyer in Manchester, to meet competition, at about 20s. per gross, the price advancing 1s. per ½-inch.

The bass broom stocks run from 11-inch, rising by ½-inch to 18-inch, and would need to be landed at approximately the same prices as the first named.

Banister broom stocks of various sizes are also in demand, the usual sizes running from ⅞-inch to 1⅛-inch, and about 15 inches long. Present prices range from 13s. per gross for the smaller size up to 20s. for the larger sizes.

There are of course scores of kinds and sizes of brush stocks, far too numerous to be quoted here. But should any Canadian manufacturers wish to go thoroughly into the subject the writer would be glad to hear from them. Samples can be procured for inspection if manufacturers will state the kinds of stocks which their machinery is equipped to turn out. Spruce, alder, and sycamore are the woods in general use.

Household Utensile

Pastry Boards.—Canadian manufacturers have in the past made some attempt to supply pastry boards to Manchester importers, and a little success attended their efforts. For some reason, however, no supplies are now coming to hand. Hardware merchants in the district (a list of which can be obtained on application to the Director, Commercial Intelligence Service, Ottawa) are always open to consider offers.

The boards used to be made of a clean white wood 1-inch thick, and the ends should be rounded. Sizes and current prices per dozen are as follaws, c.i.f. Liverpool: 12 by 18, 15s.; 14 by 20, 17s.; 15 by 20, 18s.; 16 by 24, 20s. 3d.; 18 by 24, 22s. 3d.

Miscellaneous Articles

To enumerate all the wood utensils in constant demand would entail the compilation of a very lengthy list. If, however, and Canadian manufacturer is interested in such a list, it will be forwarded with the fullest information that can be collected regarding competition, style, and sizes in demand, and also prices if procurable. It seems to the writer that the production of these almost innumerable manufactures of wood is worthy of the closest attention of the wood-turners of Canada. It is all a question of producing the articles wanted at a price that is competitive. Some manufacturers may have studied the matter at close range and decided that they cannot compete; nevertheless, the general opinion of hardware merchants is that Canada should be able to export certain commodities successfully, and they all seem inclined to give the Dominion preference, other things being equal.

How to Glue up Thick Stock Efficiently

The Adaptation of Thick Stock Clamps to the Revolving Clamp Carrier Has Cut the Time of Gluing in Half and Enabled Better Work to be Produced

By R. W. Burns*

There is quite a quantity of thick stock work made in different factories, and frequently the method used in gluing up this work is overlooked because it forms a comparatively small amount of the total output of the factory. Often this wark is done in makeshift clamps which have been built by the manufacturer, but more often it is done in a multiple screw veneer press. When a multiple screw veneer press is used for this work the operator must work in cramped quarters at the press and bench and stoop in placing the work, and also brace the work to prevent one piece from sliding out of alignment over the other, owing to the lubricating effect of the glue in the joints when the pressure is applied.

The same difficulties and resultant high cost used to apply in connection with edge gluing, but owing to the vast quantities of this class of work by most factories, manufacturers of equipment gave study to this matter and evolved the clamp carrier, which cut in half the cost of doing the work besides producing uniformly perfect joints.

Advantages of the Clamp Carrier

The clamp carrier has long been recognized as the most efficient method of edge gluing because it has the following advantages:—

(1) The clamps come to operator spaced the proper distance apart for insertion of work, and with front rests, form of themselves a bench on which the warped work can be hammered when tightening the clamps.

(2) The machine allows the operator to do his work in a normal standing posture in a very limited area, thus eliminating the energy used in bending, stopping, lifting heavy clamps with work in them, and walking back and forth over large floor area.

(3) The machine is of such size that, in consideration of the type of work glued, it allows time for glue to thoroughly "set" by the time one complete turn is made, and therefore the work is removed at the same point at which it was inserted in the clamps and, incidentally, the work glued up first is removed first.

(4) The machine occupies less floor space than the same number of clamps with work in, piled on the floor.

(5) The machine also enables the operator to make use of a small accessory glue roll, by means of which glue is applied to all the jointed edges of the work at one time by one motion of the arms over the glue roll.

Owing to the advantages above enumerated, it can be readily realized that if thick stock clamps were applied to a revolving clamp carrier the same effi-

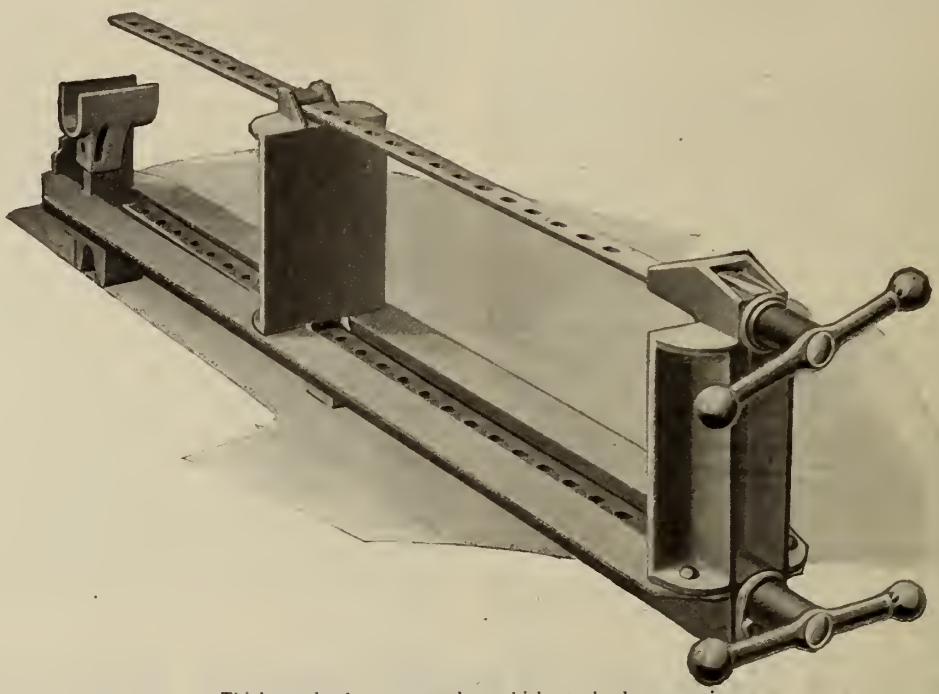
*Of James L. Taylor Mfg. Co., Poughkeepsie, N.Y.

ciency could be procured on this class of work as on the thinner work. It is therefore just one step in advance which has been made in designing and applying a thick stock clamp to the revolving clamp carrier.

Features of Thick Stock Clamps Carrier

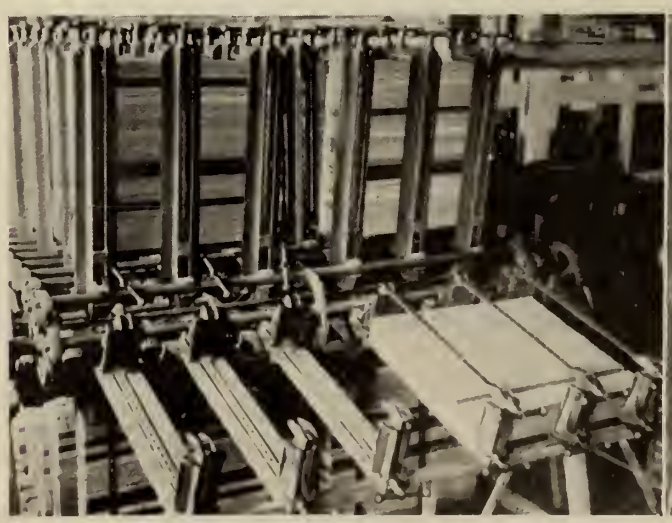
The individual clamp on a thick stock clamp carrier, shown in the cut, has certain features which are worth noting because they contribute to the quality of the product. This clamp is provided with two clamping screws and attached draw bars, one above the other below the work. These insure tight joints on both top and bottom of work, whether it is comparatively thin or up to 6-1/2 inches thick. The clamping faces of the jaws are 4 in. wide which distributes the pressure much better than a narrow jawed clamp and insures better joints.

This thick stock clamp has a removable upper draw bar so that work can be inserted and removed from above just as easily as in any regular clamp. In removing the upper draw bar the operator simply releases the catch on the adjustable jaw, and pulls out the draw bar by its attached handle. While the work is being removed or inserted these draw bars are placed within convenient reach as shown in the accompanying cut of the machine at the Imperial Furniture Co., Grand Rapids, Mich. On reinsertion of the draw bars the catches automatically adjust themselves and lock in the draw bars.



Thick stock clamp as used on thick stock clamp carriers

On comparatively narrow leg stock where blocking is being done as shown in the cut of the machine at the Shaw Furniture Co., the top draw bar is not used. In this case the clamping strain is delivered to the angle iron bars which form the table of the clamp through the foot piece of the adjustable jaw which engages the lower edge of the angle iron bars. When, however, the work is thick enough to warrant the use of the upper draw bar the clamping strains are different. In this case there is a direct pulling strain on both top and bottom of the adjustable jaw



Thick stock clamp carrier at the Imperial Furniture Co., Grand Rapids, Mich., showing where upper draw bars with attached handles are placed temporarily while work is inserted and removed

Thick stock wheel type clamp carrier at the Shaw Furniture Co's. plant, Grand Rapids, Mich., showing blocking being done without the use of top draw bar

and consequently no bending strain on the angle iron clamp bars. The only purpose of these bars in this latter case is to provide a broad, rigid working table on which to rest the stock, and to space the clamps properly in respect to the successive sections or leaves.

What Governs the Size of the Carrier

The size of a clamp carrier is always determined by the time required to make a complete revolution of the machine, which time should be equal to the time required for the glue to set on the first work inserted in the machine. In passing it should be noted that the clamp carrier allows work first glued up to be removed first, thus insuring that each piece of work successively removed, has been in the machine the longest time. This is not possible where work in clamps is stocked on the floor or on trucks.

The time required for the glue to "set" on the joint depends on the kind of glue used. First quality hide glue will set in less than half the time required by casein or waterproof glue. Therefore a much larger machine will be required in the latter case than in the former. The factor, however, which in general makes it possible to use an 8 or 12 section wheel type clamp carrier for this work, especially when hide glue is used, is that it takes much longer to apply glue to the broad flat surfaces of the stock because glue can be applied to one piece only at a time, where as in edge gluing, the glue can be applied to all the jointed edges simultaneously with one motion of the arms over the glue roll. In addition to this the pieces composing this built-up stock are usually one inch thick. Therefore a great many of these pieces are required to fill a clamp. The result is that it takes a great deal longer to fill each section of the machine than when doing straight edge gluing. The master mechanic at the Imperial Furniture Co. asserts that the thick stock clamp carrier glues their work in half the time required previously and produces much better work. Ordinarily the thick stock clamp carrier can be considered, for the purpose of estimating the size of machine, as doing the work in half the time required by hand clamps or veneer press.

Does Your Cost System Serve You as it Should?

Is it Sufficiently Detailed to Give the Information You Need But Not Too Intricate to Cost More Than It Saves—How Profit Should be Fixed in Relation to Capital and Production

By K.C. L.

A good cost system properly conducted should enable the manager of a business to prepare estimates with some assurance that a profit will be made if the work is undertaken, and at the same time should enable him to meet competition on an intelligent basis. It should tell him what lines of product pay and what do not. It should enable him to gauge the efficiency of each department and to trace the reasons for inefficiency if such exists. It should be his guide and counsellor in directing the activities of his business. On the other hand, care must be exercised that the system insalled is not too complex and that the cost of securing the detailed information is not greater than the gain that may result from its possession.

A great deal of this is frankly admitted by the average plant owner, but there are some queer twists to human nature, some of which leave one wondering how some business men figure. To illustrate what I mean I will relate a little experience that came to my attention recently. The head of a woodworking firm was in the market for some goods. After an unsuccessful attempt to beat down the prices by playing one competitor against the other he inquired how it was that their prices were the same, and offered one fellow the order if his firm would cut the price about fifteen or twenty per cent.

The party in question stuck to his guns, and so did his competitors who had also had the fifteen per cent. inducement held out for them. They simply told Mr. Buyer that they knew their costs, had compared them and fixed a selling price that would give them a fair profit, making a gentlemen's agreement to stick to their prices. The woodworker in question then made the extraordinary statement that the members of his industry in his community also had an agreement of that kind but that he did not allow that to stop him from getting business, plainly insinuating that he thought nothing of cutting prices to get in under the other fellow. But perhaps the most remarkable part of the matter is that this fellow has had probably more to say on the subject of costs than anyone else connected with the woodworking industry.

Must Not be Over-Elaborate

There is almost no end to the detail to which a cost-finding system may be carried. In the hands of an over-zealous accountant or one whose judgment is obscured by an ambition to chase endless stacks of figures, an over-elaborate system may be installed that will result not only in financial loss, because of the actual expense of operating the cost-finding machinery, but which may act as a clog on the actual machinery of production.

The introduction of a satisfactory cost system requires, therefore, more than a knowledge of the industry itself. It requires a knowledge of the particular factory, and a keen discrimination regarding the detail to which the cost-finding is to be carried. Very rough detail costs may be satisfactory in some lines while very accurate cost statements may be absolutely necessary in others. Even in the same plant the same degree of detail accuracy is not necessary in all lines and a skilled cost finder can save large sums in the operation of his system by a careful observance of the relative requirements of different lines of the company's manufacture.

For the reasons just stated the installation of a cost system should, usually, not be left entirely to the general accountant. The cost books, for the best results, should be merged into the general accounting system, but the cost finding methods that will give the best results will be the result of collaboration by

an accountant and an expert on the manufacturing operations of the particular industry. As the woodworking industry covers many different lines it will be obvious that an expert on furniture manufacturing costs would know very little about installing a system for a plant manufacturing interior trim.

The principles of cost accounting are definite and do not change, but the degree of detail to which it is desirable to carry their application can be fixed only by someone well versed in the details of manufacturing and who knows just what results it is desirable to obtain and what results are useless.

The cards and forms which are suitable for one kind of work are useless in others. Therefore, there is nothing to be gained by reproducing forms. The general underlying principles of cost-finding are, however, universally applicable and if the principles are clearly understood there should be no difficulty in developing cards and forms suitable to the work in hand.

The Factors Involved in Costs

The manufacturer buys supplies which he classifies as raw or unworked material. On this material a certain amount of actual labor is performed by his men. It is not difficult to obtain a fairly accurate account both of the cost of the material used and of the actual labor bestowed upon it, since these two elements of cost are paid for directly in money. But, in addition, many others must be employed who do not work directly upon the product, yet the wages of these men are certainly a part of the cost of production.

In addition also to the material that goes directly into the product there is much material that must be used to carry on the work, though it does not enter into the product. Thus coal, oil, waste, etc., are chargeable against production, though not entering into the product directly. And, finally, there are many other items of expenditure, such as insurance and taxes, that are neither labor nor material, but which must be included in the completed cost, though they cannot be connected directly with any particular piece of product.

Material which enters directly into the product is known as direct material or more simply as material. All material which is chargeable against production, but which does not enter directly into the product is called indirect or expense material. Glue, screws, nails, etc., may be used directly in production but not in quantities large enough to bother about so far as any one piece of product is concerned. They are then treated as indirect material.

Labor which is expended directly upon the product is called direct labor, productive labor or, simply, labor. All labor chargeable against production, but which cannot be connected with some particular piece of work, is called indirect or non-productive labor.

What Constitutes Burden

It is not difficult to allocate the direct labor and direct material which goes into any piece of work, but it is exceedingly difficult, often, to charge each piece with its correct share of indirect material, indirect labor and the other items of expense not directly connected with production, such as clerical salaries, etc. All these indirect charges are, therefore, usually gathered into lump sums, as will be described hereafter, under the name of burden, overhead expense or, more simply, expense. The great problem of cost-finding is to properly and justly distribute this burden or expense over the product so that each article shall bear its own share and only its own share of expense.

The cost of the selling department and accounting departments are of the indirect kind, and hence are included in the expense. But as has been noted these functions are independent of production, are under their own officers, and the latter should be held strictly accountable for their own expenditures. The manufacturing superintendent should be held accountable only for the costs of actual production and the cost books should show the relative proportions of expense chargeable to each department.

Expense, therefore, is divided into manufacturing or factory expense, administrative or office expense and selling expense. In many instances the administrative expense is small compared with the selling expense and they are grouped together under the name of general or commercial expense. It is often highly important that the cost of the sales should be carefully separated from the administrative or office expenses in order to locate expenditures accurately and to fix responsibility beyond question.

It appears, therefore, that the most natural primary divisions of manufacturing cost are direct material, direct labor and manufacturing or factory expense. It is often customary to omit the qualifying word and speak of direct material and direct labor simply as material and labor. The sum of the direct material and direct labor is known as the flat or prime cost. The sum of the prime cost and the factory expense is the shop cost, known also as the factory cost or manufacturing cost. The factory cost includes all expenditures for which the manufacturing superintendent is held responsible. The factory cost includes, therefore, all items properly chargeable against the product up to its delivery upon the shipping floor or to the stockroom, depending on its destination. The sum of the factory cost and the general expense is the total cost and the total cost plus the profit is the selling price.

Fixing the Profit

Naturally the relative proportions of these several items will vary with the enterprise. The items included in the total cost of production are necessarily fixed by the nature of the product, the processes of production, the efficiency with which the works are operated, and the cost of marketing the product. Profit, on the other hand, is somewhat arbitrarily fixed, but is closely connected with the volume of business transacted, a feature that is often lost sight of.

Suppose, for instance, that the total cost of the product for one year is just equal to the amount for which the business is capitalized, and on which it is desired to pay, say, six per cent. profit. Obviously, if the total cost of production is increased by six per cent. in order to fix the selling price, this object will be accomplished. On the other hand, if the total cost for the year is small compared with the capitalization, the percentage to be added must be increased proportionately; while if this total is great compared with the capitalization it can be reduced in like ratio.

The value of the output per dollar of inventory is, therefore, a very important matter. It is not sufficient that the material and labor value of all products be low. The volume of the output must be sufficiently high so that the profit which must be added will not bring the selling price above the market conditions.

How Should Skilled Operators be Selected?

The Necessity for Employing Capable Machine Men in Woodworking Plants Emphasizes the Value of Trade Tests that Determine the Applicant's Suitability for the Work

By Russell J. Waldo

That the greatest number of executives who are interested in reducing their production costs may be benefited by the studies carried out by the writer and may put into use those methods which have been found most useful and effective in placing skilled operators and machine repair men in production shops, the writer, in response to repeated requests for data pertaining especially to wood machines, has decided to prepare a paper detailing the use of these tests and the making of them in such a manner that others too may put these new methods into use to their advantage.

It is true that these methods are not at the height of perfection; for that matter, neither is any process of production. It is true, however, that these methods as they stand are capable of reducing by the greatest possible amount the guessing connected with the selection of employees. These tests have been thoroughly discussed by engineers and superintendents so that there might not be a thing in them that was unnecessary or an important point not covered. No man can put these fundamental principles to the test without reducing the element of chance in employment by a large percentage, and the more care and study that is applied the greater will be the accuracy. It must be pointed out here, however, that there must always be the element of chance as long as it is necessary to hire human beings for handling our tasks.

Men Not Properly Selected

First of all, I would like to point out some of the drawbacks to the former method of employment and in what manner it proved costly. One of the worst drawbacks industry has ever had was the fact that foremen gave the man hiring no chance to select wisely. This was principally because the employment managers have never had the backing which would allow them to take the necessary time for the selection of the best men obtainable for the task. The first demand that followed the request for a man was to get someone even if he must be broken in a lot. Get the right man, if possible, but at all costs, get a man! However, that has proved most costly and executives are fast learning that to have the best of men they must have sufficient time to select them and to make sure they know the job for which they are being hired. The foreman was the only man who understood what the job included and he was not in a position to pass that information on unless he had the opportunity to interview the man personally. No file was kept of applications from those interviewed. Either the man was hired and his application used or he was told that he could not be used and asked to call again.

These factors have cost the manufacturing industries huge sums of money, so much so that they are now beginning to awaken to the fact that there must be some method whereby the cost of production and the labor turnover figure might be cut down. To do this the man who can do the job, who enjoys the job and who will be satisfied in one particular shop must be hired, and employment methods must be used that aim to accomplish this.

Development of the Trade Test

It was during the war that the need of closer questioning was seen. Leaders everywhere found that they must select many who had little or no experience and to do this successfully they must work out some sort of method whereby they might be able to weed out the undesirables. They soon found out that men would tell them what they wanted to know and would not give any definite information because no effort was made to induce a man to tell his experience along definite lines. The average employment interviewer would simply ask a man what his experience had been along a given line and that would be all there was to it.

Key number .....
Job specification for .....
Machine name .....
Foreman .....
Qualifications

Physical	**Mental**
Age	Speak
Height	Write
Hearing	Calculate
Sight	Education
Part of body used most	Read blue prints
Mechanical	**Progressive**
Operate machine	Ambitious
Set up work	Settled
Keep up tools	Directive
Inspect work	Dynamic
Love of machinery	Careful thinker
Nature of work	**Conditions of Work**
Heavy	Standing
Light	Stooping
Bench	Lifting
Sitting	Greasy
Dangerous	Overtime
Fine	Clean

Time required to learn plant .....
Promotion .....
Terms of employment:
Starting rate ..... Piece, day or hour.
Hours per day ..... Week ..... Av. pay per week .....

Fig. 1

The colleges were asked to assist in the working out of suitable methods. This was fine if college men could use the methods. However, these methods were to be used by men who did not have college training and the methods proved disastrous to them because they did not understand the result which had been attained.

For years colleges had been checking students up as to heridity, temperament, patience, strength, and many other personal traits which had little or no bearing upon the man's actual ability to handle a given machine. Because the average person could not handle these tests, executives everywhere have

passed them by as bunk. When the word "trade test" is mentioned to a practical man today he simply straightens up his shoulders, smiles and passes on, feeling that it is some more of that pretty stuff he has seen before. The writer has insisted that some executives read and criticize the methods which are outlined in this paper and in every case they have remarked almost in unison: "If these tests could only have been worked out so we could have had them during the war!"

High Price Machines Need Capable Workers

For a number of years past executives have spent huge sums of money that they might have the proper machines and now they are beginning to realize that they must exercise the same exacting care in selecting men who will handle these expensive machines. Machine makers everywhere are more than anxious that employers should have the best operators. The efficient man makes the best showing for the machine and opens the way for the sale of future machines while the inefficient man makes a poor showing and lessens the chance of selling future machines.

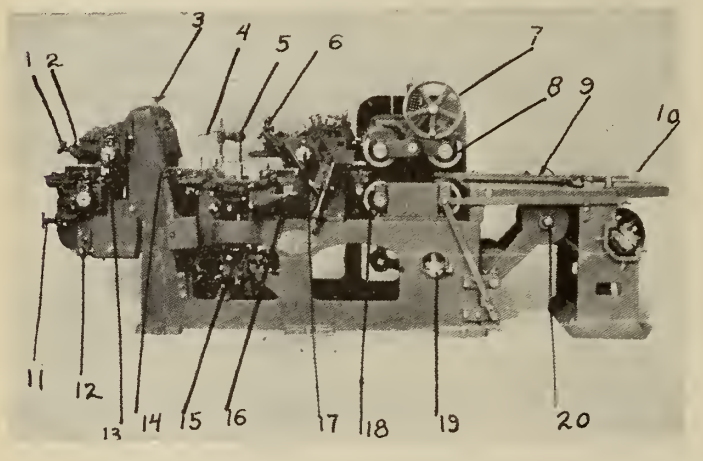


Fig. 2

What are these trade tests anyway? In a few words they are nothing more than a practical, well defined method for the interviewer to follow out which will serve as a guide in selecting especially skilled men and with equal accuracy every man who appears. This method is no respecter of persons; each and every person must be questioned equally severely and must stand upon his own ground. The applicant is given an opportunity to actually prove what he talks about. He is questioned along definite lines with a view to seeking definite information.

First allow me to state that it is not the writer's object to show a method which can be used holus bolus, but to so outline the plan that others may grasp the idea and work out special sets of questions for use in their own particular plants. No complete set of tests is given but portions are shown to cover several machines.

To make out these tests the interviewer should possess every piece of information relating to the subject that he can obtain; catalogues and other descriptive matter must be collected; engineers, foremen, skilled operators must be consulted, and work must be revised before success can be assured. The next step to be taken is to acquire some experience upon the machine, if possible. At least, watch the machine and find in which direction certain levers are moved and handwheels are turned to accomplish certain operations. Functions of levers must be determined and noted upon illustrations.

Questioning the Applicant

Of first importance is the job specification. This is suggested in fig. 1. All blanks should be filled out to make sure that all information is properly added for the interviewer's information.

Adequate questioning is of next importance. In questioning the apprentice there is little actual information which can be had in connection with his experience. His likes and dislikes can be understood and the following questions might be used:

Why do you want to come here?
Do you have friends here?
Why do you think we can use you?
How long will it take you to get here?
What does your mother or wife think of your coming here?
Have you ever been in our shop?
Are you taking any course of study now?
Do you object to working over time?
Will you listen to instructions?
Why did you leave your last plant?

These questions might seem out of the way and of little value yet the manner in which he answers them and the character and promptness of the responses will aid the interviewer greatly in deciding upon the man.

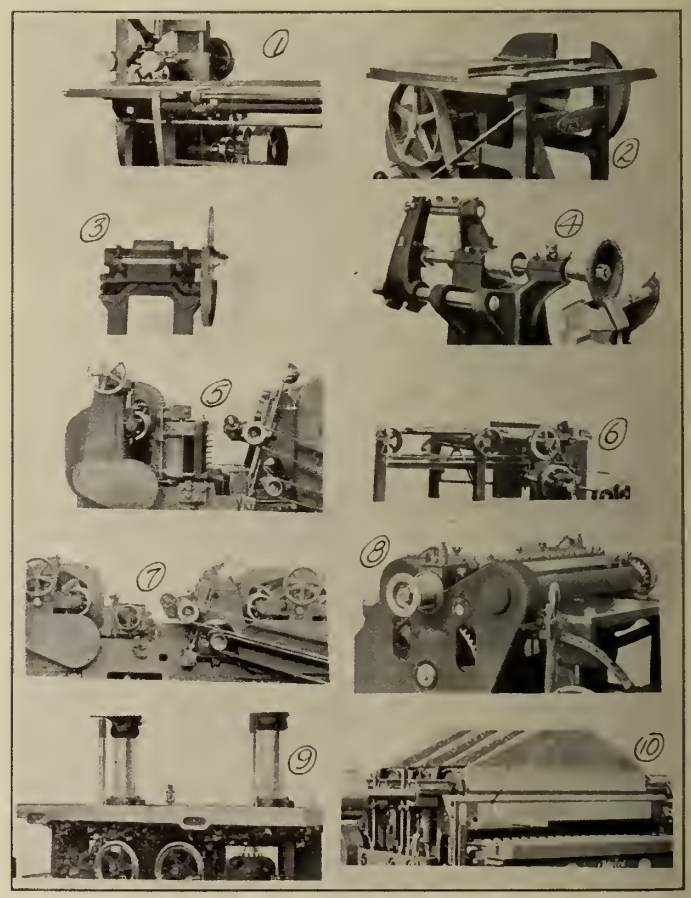


Fig. 3

The questions to be asked the skilled man are much different. They are based upon actual experience and more can be expected. Some questions follow these applying to the Yates No. 91 matcher:

Q.—What is the object of raising the quick release lever?
A.—Lowers bottom head for single surfacing
Q.—What kind of cutter head is used regularly?

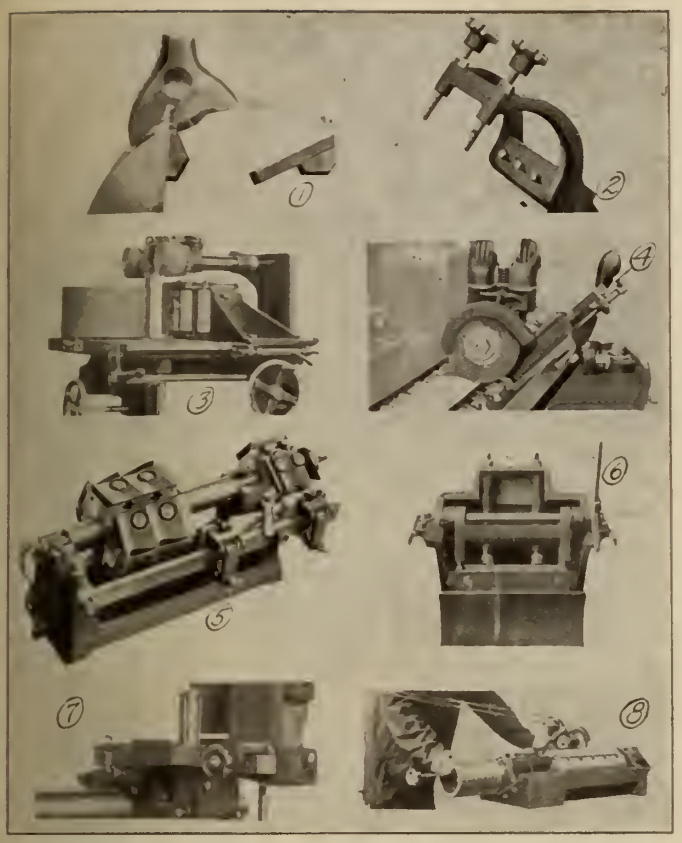


Fig 4

A.—Six knife round head.
Q.—How is jointing accomplished on bottom head?
A—By pulling bottom head out. Jointing is done with head in working position and at full speed.
Q.—How is pressure obtained for the top feed rolls?
A.—By two heavy coil springs one at each end mounted on verticle plunger rods that extend beneath the bed.
Q.—How many gears are used in the infeed rollers?
A.—Five.
Q.—How does operator at infeed end of matcher operate chipbreaker release lever?
A.—An eye in lever allows the attachment or rope or wire which can be carried to infeed. end.
Q.—How can operator determine the thickness of stock being run on his machine?
A.—By indicator above the feed rolls.
Q.--How are adjustments made to matcher legs?

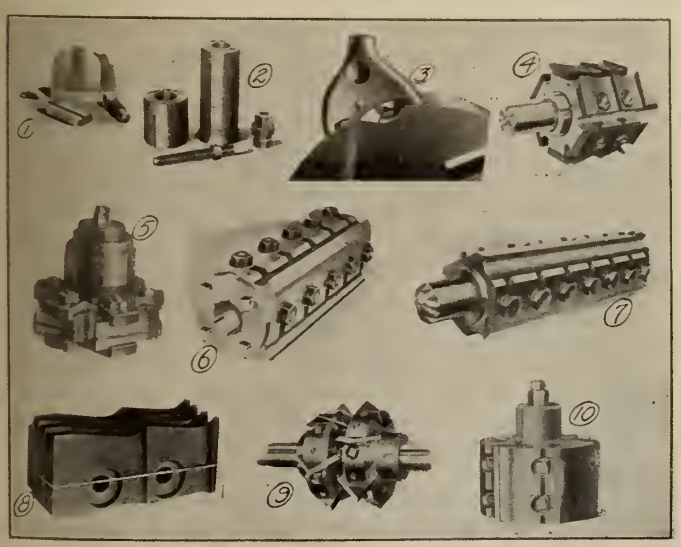


Fig. 5

A.—By means of a long screw threading through each yoke.
Q.—What is the object of the grooves in the matcher pulleys?
A.—When machine is running at high speed they serve as pockets for chambering the air and prevents air cushion between pulley and belt
Q.—Where is the profile jointer mounted?
A.—On a shaft over the top profile head.
Q.—When the control of depth of cut is in the lowest notch what thickness of stock is being removed?
A.—One quarter of inch.
Q.—How arc cutter knives most accurately set?
A.—Knife setting jig.
Q.—How is the slack taken care of in the belts?
A.—By the automatic gravity belt tightner
Q.—How many feed rolls are there on the 91 matcher?
A.—Six, four infeeding and two outfeeding.
Q.—How is adjustment made in roll boxes?
A—By three adjusting screws.
Q.—What is the advantage of chain drive in the gears?
A.—Instead of placing the load upon two or three teeth it is placed upon half of the teeth therefore reducing the chance of breaking to the minimum.

It can be seen that there are definite questions which can be asked pertaining to the machine. The operator can be watched and questions worked out as a result of his actions upon the machine. Questions involving general principles of machine operation may

Missing Word Test—Yates Continuous Feed Glue Jointer

(Interviewer's copy)

(Words omitted in applicant's copy are those found in parenthesis in this copy).

So compact has it been made that all operating gears and (sprockets) are located inside the base.

The driven (sprocket) can be adjusted by loosening a heavy bracket on top of the machine.

The pressure rolls, which press the stock against the feed (chains) number ten on each side and are three inches in diameter.

Each roll can be individually adjusted for alignment and has a yield of (½) inch to permit the feeding of stock of uneven thickness.

Adjustment of vertical positions is by means of a (handwheel) underneath.

At the bottom of the yoke of the arm is a large (clamping screw) working in a slot by which the yoke can be clamped in any position within the limits of its adjustment.

In the bit clamping device the knife is held by a double beveled clamping gib which (bears against) the blade on one side and seats against a removable plug on the other.

For exceptionally wide cuts the bits may be made to (overlap) the flanges themselves.

The equipment consists of a (saucer) grinding wheel and a (jointer) stone.

The infeed table is regulated to depth of the cut by a (small handwheel).

Fig. 6

be added and questions pertaining to other machines intended for the same class of work may be used to determine the applicant's interest in the work.

Testing the Applicant's Knowledge

The picture test is the next step. In fig. 2 is shown an illustration of a five-head moulder with twenty parts indicated. The object is to have the applicant tell the function of lever number 16 or to tell the number of the feed shaft. This can be worked both ways with equal advantage. The writer, while at the Studebaker Corporation, preferred to have the applicant start at No. 1 and name as many as he could. After that I would adopt the other method. It should be pointed out here, however, that if front,

back and end views of the machine are used, always use the same number to indicate a given part regardless of what view it is shown upon.

Fig. 3 shows a general picture test used in checking men intended for assistant foreman. It is made up of portions of machines and the object is to have the applicant name them. The key for the interviewer's use shows the number of the machine as well as the name and it is interesting and helpful to have the applicant tell the name and number. Fig. 4 shows an attachments test. This is made up of illustrations showing various attachments used upon a particular make of machine. The skilled man can easily and quickly name them.

In fig. 5 are shown ten tools used upon the moulder. A practical and experienced man will be able to name them promptly. If the work of the applicant requires the use of some particular attachment a great many questions can be worked out for it in the same manner as in the machine picture test.

Power Transmission	Power for feeding, as shown in the drive-side view on page seven, is transmitted through a three-step cone pulley which can be belted from any direction. It is transmitted to the feeding mechanism through heavy spur and bevel gears, and pinions placed inside the base. These gears drive the endless-chain feed device, which travels horizontally on the top of the base, handling stock directly from the infeed and outfeed tables at either end of the machine. Near the center on either side are located the cutter arbors, and, just below them, are the shaving hood outlets cast as an integral part of the base.
Feed and Feed Control	The feed mechanism of a Continuous Feed Glue Jointer is the most important part of the whole machine, for, on its perfect operation depends the character of the joints made. It must be accurate to a hair, or it will make "cracks," not "joints"—it must be positive and simple in action, so that it may be relied upon for continuous service day in and day out, through rush periods, as well as slack—it must be automatic in operation so that workmen of little mechanical skill may use the Glue Jointer and still get satisfactory output,—and it must be capable of greatly increased output over other methods.
Feed Mechanism	The feed mechanism of the Yates Glue Jointer completely fulfills all requirements. The top view on the opposite page, together with the end view at the bottom of page fourteen, clearly show its principal parts. It consists, primarily, of a roller bearing automobile chain, travelling horizontally around two heavy cut sprockets, one of which is driven, through a simple, strong, reduction gearing, from the drive shaft. As the chain is strong enough to withstand many times the strain sustained in actual operation, it will be seen that the feed drive contains no practical possibility of failure. In case it should break, repairs can be made in a few minutes.

Fig. 7

The missing word test, shown in fig. 6, is very helpful. The object is to have the applicant read filling in the words in his copy which are shown in the interviewer's copy in parenthesis.

The reading test, shown in fig. 7, is of equal value. In this are shown clippings from one of the catalogues. The text pertains to a given machine and the object is to see how readily the applicant may read matter pertaining to the machine he seeks employment upon. Before he reads he should be asked to observe the test carefully as he will be asked to tell if certain sentences, facts and words are found in it after he has read it. This will make up the memory test which is shown in fig. 8. This is self-explanatory and the interviewer will need little or no explanation of it. The applicant never sees this sheet.

Memory Test—Yates Continuous Feed Glue Jointer
(Interviewer's copy)

A.—Indicates sentence is found.
B.—Indicates that sentence is not found.
C.—Indicates that fact is found.
D.—Indicates that fact is not found.
E.—Indicates that word is found.
F.—Indicates that word is not found.
A.—On both sides of the machine the lags travel.
A.—The feed mechanism of the Yates glue jointer completely fulfils all requirements.
B.—The machine goes beyond statute requirements.
A.—The roll housings are provided with another adjustment.
B.—The amount of profits saved through its use is equally gratifying.
A.—It must be accurate to a hair.
C.—The roll housing and rolls may be moved.
C.—The most important part of the machine is the feed mechanism.
D.—The economy in floor space, wages and power is very great.
C.—Power for feeding is transmitted through a three cone pulley.
C.—The chain is strong enough to withstand many times the strain in actual operation.
D.—Furniture factories are utilizing pieces now that formerly went to the scrap heap.
E.—Gears.
E.—Glue jointers.
F.—Friction gears.
E.—Cracks.
E.—Horizontally.
F.—Investment.

Fig. 8

The interviewer will want to keep a close record of these tests and a blank is suggested for this purpose as in fig. 9. Here provision is made for carefull recording the findings of these tests. Good, fair and bad will be sufficient until the interviewer can work out some method of rating which he will understand.

Date .....
Record of applicant .....
Address .....
Remarks for tests.

Observation	Special general questions
Picture Question	Special attachment picture
Picture question	Memory
Parts picture	General machine test
Reading	Sight
Missing word	
Physical ability	
Hearing	

Dominating features found were:

Mentally alert	Ambitious
Personality	Concentration
Appearance	Disposition
Home environment	Education
Health	Handshake
Executive ability	Imagination
Judgment	Memory
Skill	System

Line of promotion of greatest benefit to both of us: .....
.....
Present study being pursued .....
Remarks

Fig. 9

The trade test as outlined above is here to stay and the executive who uses it in his employment office will profit greatly by its use. As it has been with other methods which have originated to reduce guessing, so it will be with this. There will always be some one ready to criticize it and to claim that it is wrong. However, once it is carefully examined and the results seen, it will be used.

Improving the Operations of Dry Kilns*

The Principles Which Govern the Drying of Lumber in Kilns—Practical Points Which Were Developed as a Result of Investigation—How Reconstruction Produced Better Results

By Prof. Peter Gillespie and A. R. Duff

For many reasons wood is well adapted for the manufacture of furniture. It is light and and strong and is readily cut and bent. Its porous structure renders it posible to glue pieces of it together, to drive nails into it and to put a variety of finishes on its surface. To the varied arrangements of cells and pores in the different species, the beauty and variety of its natural grain are due. Although it possesses so many favourable qualities, it unfortunately also has another characteristic which is the cause of most of the difficulties encountered in the wood-working industry, viz., it swells and shrinks as its moisture content (M.C.) changes. All species of wood, hard or

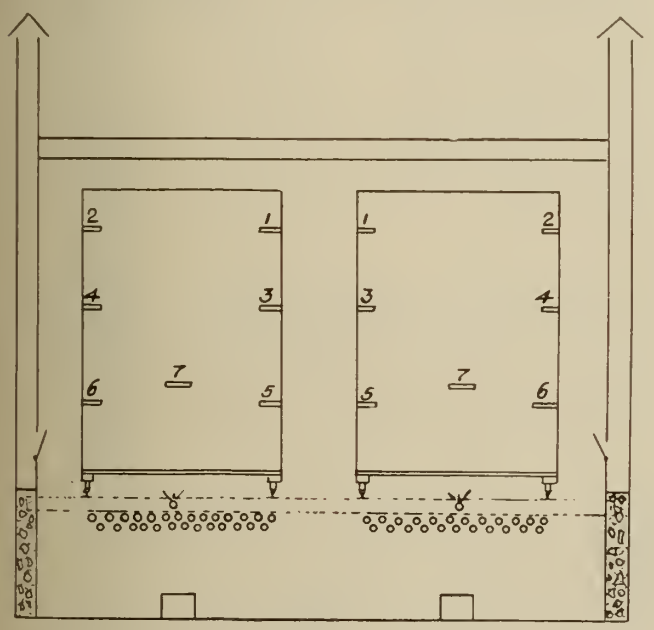


Fig. 1

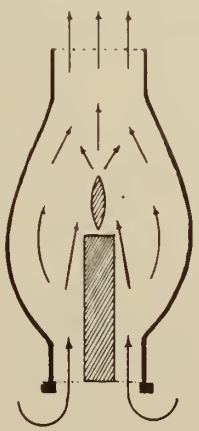
soft, are made up of the same fundamental material in the form of fibres or cells and it is the size, shape and arrangement of these cells that cause variations in density and grain. Bass-wood and oak are made of the same essential stuff, but in bass-wood there is more air space and this makes it lighter and softer. Basic wood material is hygroscopic, that is, it is of such a nature that it takes on or gives off moisture, depending on the condition of the atmosphere around it. The accompanying phenomena of swelling and shrinking, the factors which produce them and the conditions which control them, constitute the real basis of the wood drying problem.

The E.M.C. of Wood for Given Atmospheric Conditions

There is a very definite relation between the temperature and humidity of the air on the one hand, and the quantity of moisture on the other, which the wood material is capable of holding. When wood has given up or taken on moisture until it has reached a stable condition with respect to the humidity in the surrounding air, its moisture is said to be in equilibrium with the moisture in the air. If the air humidity changes, the wood M.C. at once starts to change also and continues to change until balance is again restored. The M.C. of wood indeed is always trailing up or down, following the changing humidity of the air. The percentage moisture content in the wood, when it is in equilibrium with the humidity of the air around it, is called the Equilibrium Moisture Content (E.M.C.). As a result of a great many determinations made by specialists of the United States Forest Products Laboratories, it is possible to predict what the E.M.C. of wood will be for any given combination of atmospheric and humidity.

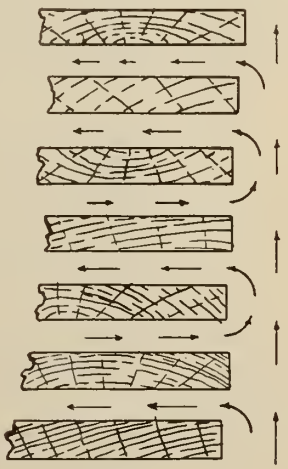
The wood in the tree may have from 50% to 150% M.C. When the tree is felled, the moisture in it starts to evaporate. The M.C. of the wood is changing as rapidly as it can to reach the E.M.C. for the condition of the air around it. If the E.M.C. for the air is 20% then the wood will lose moisture until its M.C. is 20%, but as long as the air does not become drier, the wood will not go below 20%. If bone-dry wood were left in this air it would pick up to 20% M.C.

In order to minimize or eliminate the flaws which



Circulation caused by candle in chimney.

Fig. 2



Over-hanging edges deflect air into the pile.

Fig. 3

develop in wood as a result of uneven swelling and shrinking, the E.M.C. for the atmosphere must be known and as far as possible controlled in the yard, drying kiln, dry storage, machine room, cabinet room, storage rooms, finishing room and showrooms. If, when lumber is drying, the M.C. is high and the E.M.C., as determined from the condition of the surrounding air, is low, the wood will dry too rapidly at the surface and become case-hardened. If the lumber is kiln-dried to say 5% M.C. and the dry storage

*This article is a report made by the authors after an investigation of dry kiln operation under the joint auspices of the School of Engineering Research of the University of Toronto and the Furniture Manufacturers' Association. The report has been published in Bulletin No. 3 of the School.

room has an E.M.C. of 10%, the dried lumber will take on moisture up to 10%.

Air Seasoning vs. Kiln Drying

Ideally dried lumber is as sound as when in the tree and is free from checks and stresses. The furniture manufacturer aims at producing this product at minimum cost and with minimum wastage. This can only be accomplished in a kiln where air conditions can be controlled throughout the drying process and where an even circulation of air around every course of lumber on the truck is assured. When the M.C. of the lumber is high, the E.M.C. for the circulating air is purposely kept high. As the M.C. drops, the E.M.C. is lowered also until when the lumber is nearly dry, the latter is at its minimum value. Since one cannot control these conditions in air seasoning, lumber piled out of doors may, in dry weather when the

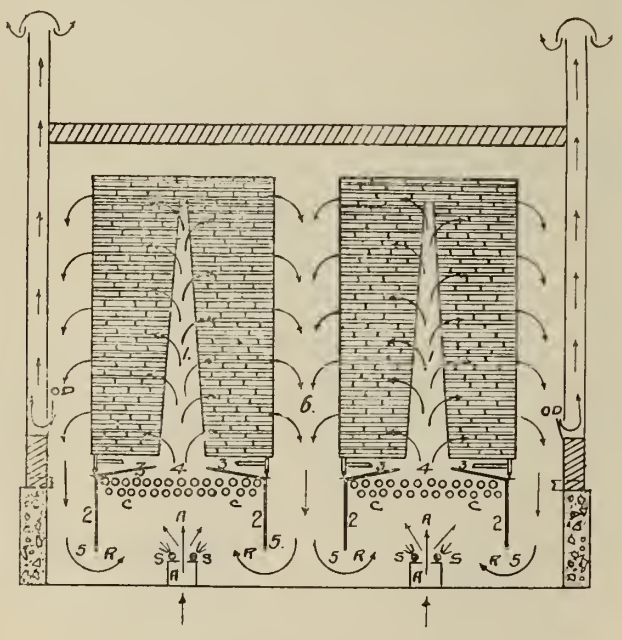


Fig. 4

E.M.C. is low, dry too rapidly at the surface and develop checks. This is often seen in plain oak. Kiln drying, therefore, should be better than air drying, but unfortunately good kilns and good kiln drying are difficult to find. Most modern kilns are an improvement on the old hot-box type, but in many of these the engineering principles which made good drying possible have not been applied.

The Rate of Drying

When lumber is drying the moisture in it gradually diffuses from the centre to the surface, where it is evaporated, and if the rate of evaporation is much more rapid than the rate of diffusion, excessive surface drying will result. The controlling factor in lumber drying is the rate of diffusion of moisture from the centre to the surface of the board. The question is often asked: "How fast can lumber be dried?" The answer is that there is nothing to be gained and much to be lost by evaporating moisture from the surface faster than it can diffuse from the centre to the outside. Too rapid evaporation caused by great heat and increased forced circulation is to be avoided. The United States Forest Products Laboratories have developed a series of drying schedules suitable for different species of wood with varying moisture contents, and by adhering to these schedules or using them as a basis from which to work, excellent drying should be obtained.

The Compartment Kiln

For furniture factories where a variety of wood species of varying thicknesses are used, the compartment kiln offers many advantages over the progressive type. Most compartment kilns are in small units made to hold three or four trucks of lumber—about ten to twelve thousand feet board measure. In these small units different species of wood which require special drying conditions can be handled to advantage. Heavy or dimension stock can be dried separately. Special orders can be dried rapidly. In operation, the kiln is charged, the steam spray is turned on and the lumber is thoroughly heated in a moisture-saturated atmosphere. The spray and heating coils are then adjusted so that the wood starts to dry in very mild air conditions—high E.M.C. As the wood dries the air conditions are made increasingly severe, the temperature being raised and the relative humidity being lowered, until finally the wood is dry. The E.M.C. is lessened only as the decreasing M.C. warwants it. Six four-truck compartment kilns could easily supply a demand of thirty thousand feet of dry lumber per week.

What is desired in the operation of the kiln is to dry all boards on a truck simultaneously and uniformly. It is a comparatively easy matter to control the temperature and relative humidity of a kiln, but to have a natural circulation of conditioned air around every course of lumber on a kiln truck is not so easy of accomplishment.

For one particular run the kiln was charged with quarter-cut red gum with a M.C. of about 40%. Sample boards were placed in positions 1, 2, 3, 4, 5 and 6, as indicated in Figure No. 1. The kiln conditions were made to conform with the Red Gum schedule of the U.S.F.P. Laboratories, and as the drying progressed and the M.C. of the samples decreased, the temperature was raised and the relative humidity lowered to conform to the schedule. When the M.C. had dropped to about 8% the operator made a smoke test of the circulation and observed that the smoke passed all around the lumber pile, but not through it. This led to the belief that perhaps the centre was not drying as rapidly as the outside. Boards were extracted from the positions marked 7 and when tested showed over 30% M.C.; that is, on the same truck were boards having 8% and others having 30% M.C. The heated air from the coils in rising had taken the easiest path, i.e., outside of the lumber pile.

Very many different dry kilns were examined and studied and although most of them had means of controlling heat and supplying humidity, there was no control of the convection currents set up in the kiln. Some kilns admitted outside air at the top and forcibly discharged moisture-laden air at the bottom. Others took fresh air in at the bottom and released it at the top. All had heating coils under the lumber with steam spray pipes over the heating coils. It was often found that the boards on the outside of a truck dried much more rapidly than those at the centre. The boards immediately above the heating

coils were exposed to much more severe conditions than others. Some boards would be case-hardened and others not. All kilns had heat control, some had humidity control, but in none of them was the circulation anything but haphazard.

The air which comes in contact with the bottom boards of a truck should be conditioned so that too rapid surface drying is prevented. This can be accomplished if the recirculating air, the fresh air and the steam spray are all mixed before passing through the heating coils and to the lumber. If the centre part of a truck tends to lag behind the outside in drying, a convection current of conditioned air should be directed into the heart of the pile. This can be accomplished by applying the principle that hot air rises and cool air sinks. (See Figure No. 2.) It was also observed that the least amount of overhang given to the edges of the boards facilitated the flow of rising air laterally between the courses of lumber and the lack of any such overhang appeared to prevent lateral circulation. (See Figure No. 3.)

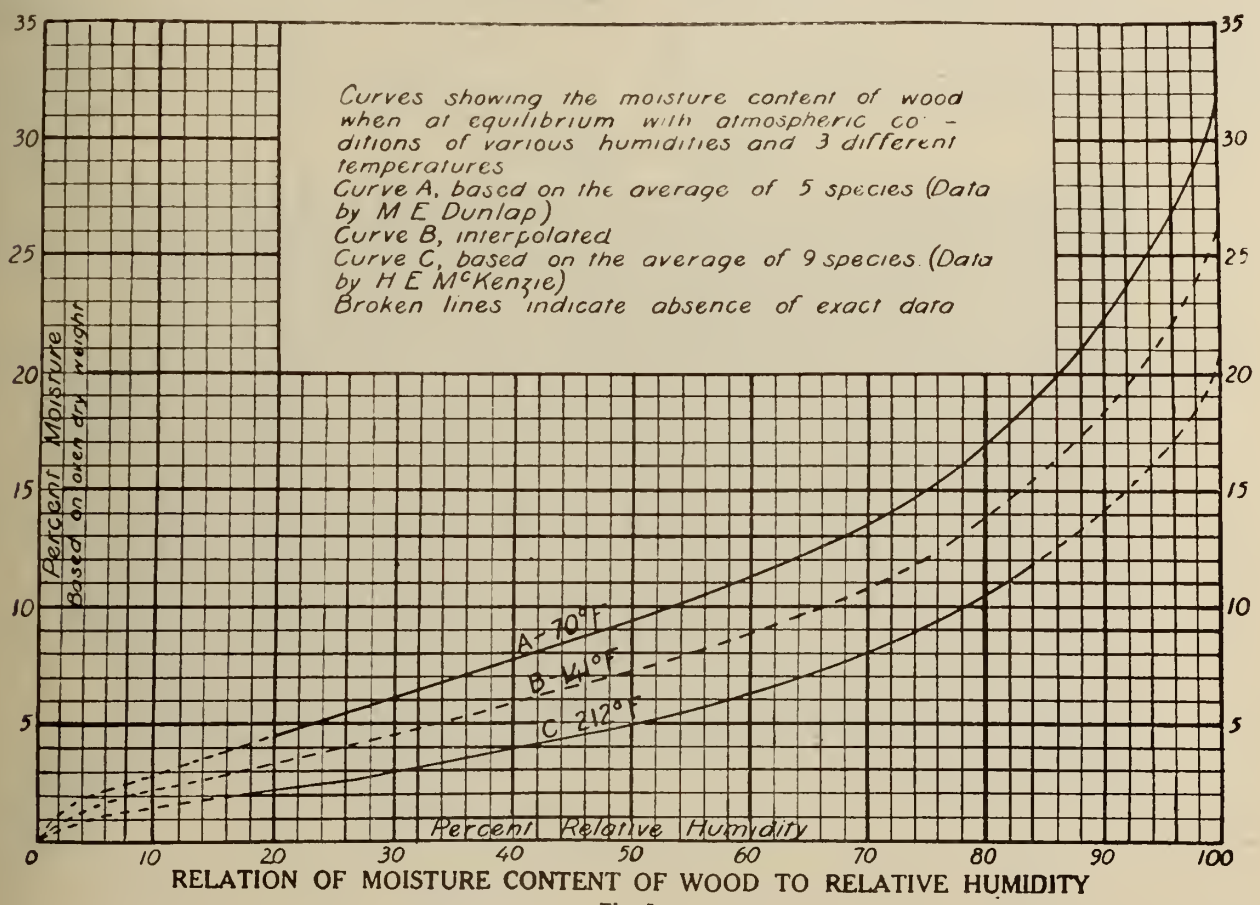
The kiln which, as a result of this study, was developed at the plant of the Stratford Chair Company, Stratford, Ont., appears to include the desirable features indicated above. As it was desired to have the conditioned air rise into the centre of the load and pass horizontally through it, the lumber was piled with a hollow tapering centre, closed at the top and covered with two or three courses of lumber. (See Figure No. 4.) The tapering sides of the hollow centre give the necessary overhang to the edges of the boards to deflect the air laterally through the pile.

A natural convection current, rising into this hollow centre of the pile, is produced by a chimney-like chamber beneath. The side walls of the chimney chamber (2) are vertical and extend from near the floor of the kiln to above the heating coils, and the top panels (3) slope inwardly and upwardly from the side ones, leaving a narrow longitudinal opening (4) under the trucks, extending the length of the kiln. Near the top of this chimney and about three feet from the lower edge of it are the heating coils (c). The fresh air supply is from openings in a duct (a) which is on the floor and extends the length of the kiln beneath the centre of the chimney. The steam spray pipes (s) are placed on top of the fresh air supply duct.

With the hot steam pipes three feet above the lower edge of the chimney (4) the air which is heated by contact with these pipes can not sink and escape from the bottom of the chimney. It must rise and in rising is prevented from going anywhere, but into the heart of the pile and through it. Movable covers are used to close up any part of the chimney opening that is not under a kiln truck.

If the lumber has moisture in it, the air passing through the pile loses heat and picks up moisture; the air leaving the pile is cold and moisture laden and sinks to the floor of the kiln. On reaching the floor or near it, it goes under the lower edge of the chimney (5) and is ready to rise, through the heating coils again. It cannot rise, however, unless it be replaced by other air. The rising of heated air and its replacement by cooler air is what sets up circulation in the kiln.

The conditioning of the air is accomplished in the chimney under the lumber. The air which has descended to the floor of the kiln is drawn into the chimney to replace the risen heated air. If necessary, fresh air is added to this from the ducts on the



RELATION OF MOISTURE CONTENT OF WOOD TO RELATIVE HUMIDITY

Fig 5

floor of the kiln, and moisture by steam from the spray pipes. The openings in the spray pipes direct the spray to the corners of the chimney, where it is made to circle around and mix with the recirculated and fresh air before it rises through the heating coils. It was observed that the recirculated air, the fresh air and the steam spray are here thoroughly mixed before they rise through the heating coils and into the lumber pile. This natural circulation assured, the air floats up into the lumber at a rate which permits it to change direction readily and move laterally through it. To discharge moisture from the kiln, part of the air descending outside of the lumber pile is permitted to escape through ducts (O.D.)in the side walls, the openings of which are situated slightly above the rail level. The openings of the vents are controlled by valves operated from the outside.

The kiln is intended to be symmetrical. The heating coils and the steam spray pipes are of the return bend type, so that temperature and relative humidity will be uniform from front to back and from side to side. In order to complete the symmetry, an outlet duct should be supplied at (6) between the trucks; but in practice this has not been found necessary.

When the kiln was first ready to operate, four trucks of cold lumber, having a high M.C., were placed in the cool kiln. The kiln door and the inlet and outlet air ducts were closed and the steam spray turned on. The steam, coming in contact with the cold lumber, was immediately condensed into a white mist, and with a strong electric torch it was observed that from above each course of lumber on the trucks the steam mist flowed out like a miniature waterfall. The steam had risen into the centre of the pile, and in passing through it was cooled under the trucks. Smoke tests subsequently confirmed this.

The smoke apparatus, which has been described in publications by the U.S.F.P. Laboratories, consists of a hydrochloric acid and one of ammonia connected by glass tubes. Air is made to bubble first through the acid and then through the ammonia. The ammonium chloride—a dense white smoke which is formed—visibly indicates the direction of the air currents in a kiln or room.

Working Charts

Figures 5 and 6 have been reproduced from bulletins of the U.S.F.P. Laboratories. From the former, the relative humidity and the temperature being known, the moisture content of wood when in equilibrium with the surrounding atmosphere, may be determined. At 70°F., for example, the equilibrium moisture content of wood is 10% if the relative humidity be 53%. From Fig. 6, the relative humidity may be determined if the dry bulb and wet bulb thermometer readings (and hence their difference) are known. If the dry bulb reading be 90°F. and the wet bulb reading 80°F., the difference (T—T1) will be 10°. The intersection of the 90° line (vertical) with the 10° line (rising to the right) followed horizontally to the marginal scale gives 65. The relative humidity is therefore, for the conditions assumed, 65%.

Features of The Reconstructed Kiln

During subsequent operation of the reconstructed kiln, the following observations were made:

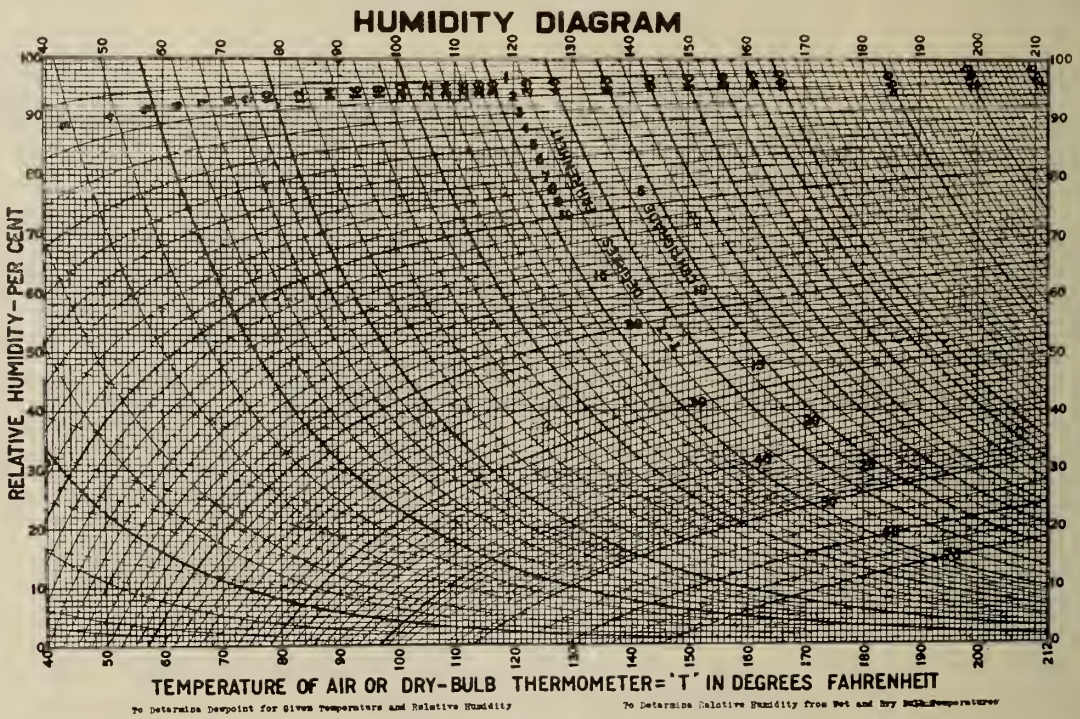


Fig 6

(1) The kiln appears to consume less steam than formerly.

(2)Its operation is very simple.

(3) Uniformity of condition throughout the kiln is evidenced by the remarkable uniformity in the quality of the dried lumber.

(4) Positive circulation is evidenced by the smoke test and by the greatly reduced time necessary to dry the lumber.

(5) Heat consumed by the kiln is efficiently used to evaporate the moisture from the lumber.

Although this kiln dries lumber quite rapidly, it must be kept in mind that the first object in kiln drying is to produce uniformly dried lumber free from internal stresses. If lumber of the desired quality is being produced, the minimum time in which it can be dried is regulated entirely by the rate of diffiusion of the moisture from the centre to the surface of the boards in the kiln.

Reducing Repair Bills by Using Ball Bearings

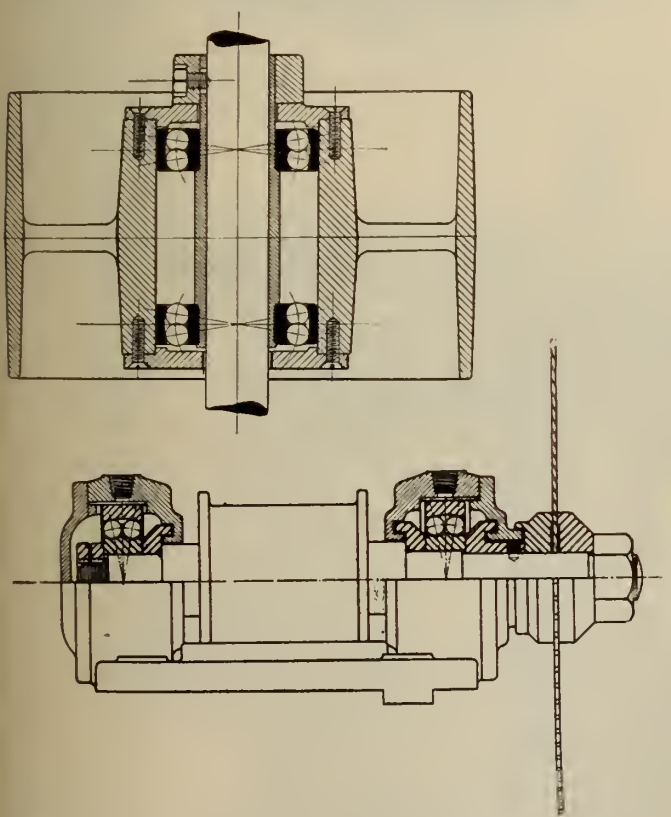
In the Field of Woodworking Machinery, Ball Bearings Have Been Widely Accepted as an Ideal Means of Minimizing Friction, Increasing Machine Life and Improving Production Operations

By "Designer"

Few developments in recent years have so completely revolutionized woodworking machinery as the application of ball bearings. As the cost of labor arose means had to be obtained to keep down production costs. Designing engineers sought to bring about the desired results by increasing the speed, and hence, the hourly production, of woodworking machinery. But it was soon found that there was a definite limit to the speed at which bronze and babbitt bearings could be operated. Designers then turned their attention to ball bearings, the first attempt to apply ball bearings to woodworking machinery being made in Sweden in 1907.

So successful were the first applications to woodworking machinery that ball-bearing equipped machines rapidly came into general use in both Europe and America.

In addition to solving the problem of obtaining higher speeds on woodworking machinery, ball bearings also brought a host of new advantages. Better work, reduced maintenance, less power, less oil, cleanliness, freedom from hot boxes and reduced fire risks were some of the things made possible.



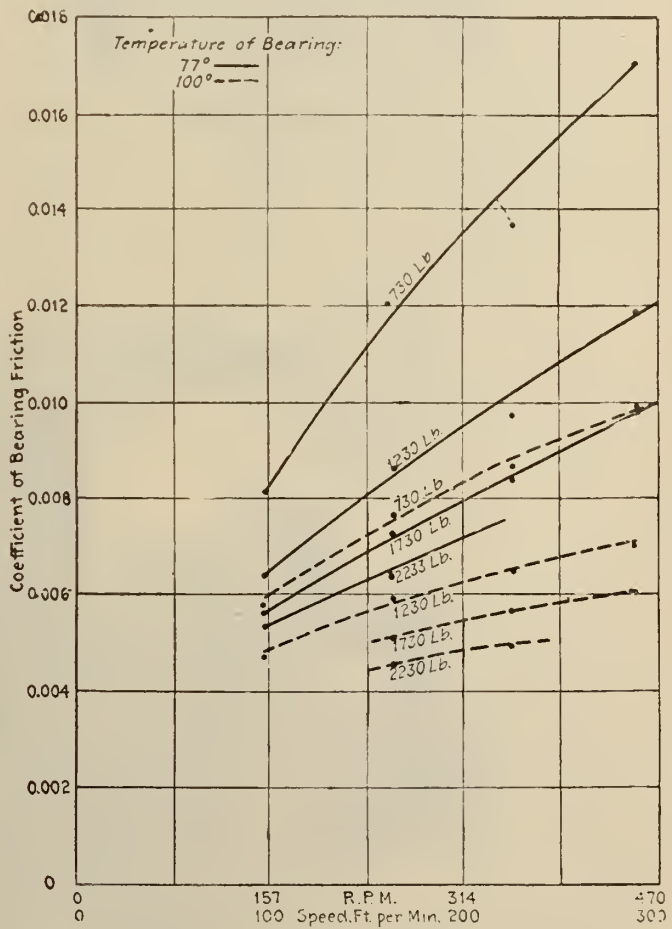
Upper: Ball bearing loose pulley. Lower: Ball bearing mounting for saw

How Ball Bearings Improve Quality and Reduce Maintenance

Better work is obtainable from ball-bearing equipped machines, as well designed and properly selected ball bearings develop no discernible wear in service, having the same snugness and accuracy of fit after years of service as when new. As a result spindles maintain their original accurate settings and are free from chatter which accompanies the use of plain bearings that wear quickly.

Furthermore, the absence of wear means that periodic adjustments which plain bearings demand at a serious loss of productive time are unnecessary.

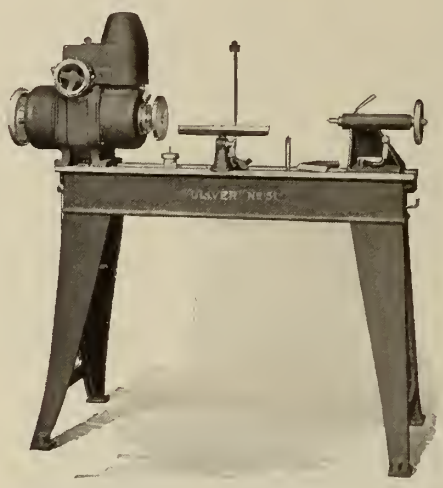
Added to the advantages of better work and more work with fewer interruptions to production are substantial savings in both fuel and oil. Well designed and properly selected ball bearings save from 60 per cent. upwards of the power which plain bearings dissipate in friction, heat and wear. Even though wood refuse be used for generating power, this saving is worth while as it is substantial and permits an income to be derived from considerable waste material that otherwise would have to be consumed in the boiler room.



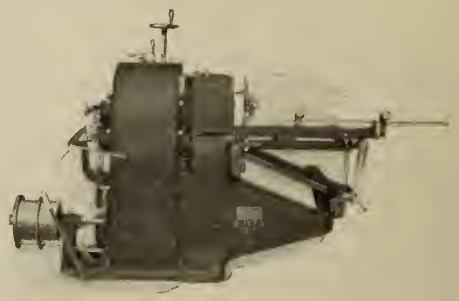
Coefficient of bearing friction between three types of bearings—plain, roller and ball

The lubricant saving is likewise considerable, generally amounting to 80 per cent. This saving is due to the fact that ball bearings operate in sealed housings from which lubricant cannot escape and requires

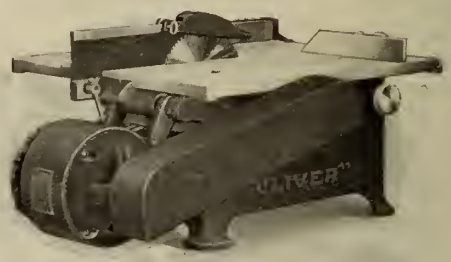
Typical Woodworking Machines in which Ball Bearings Are Used



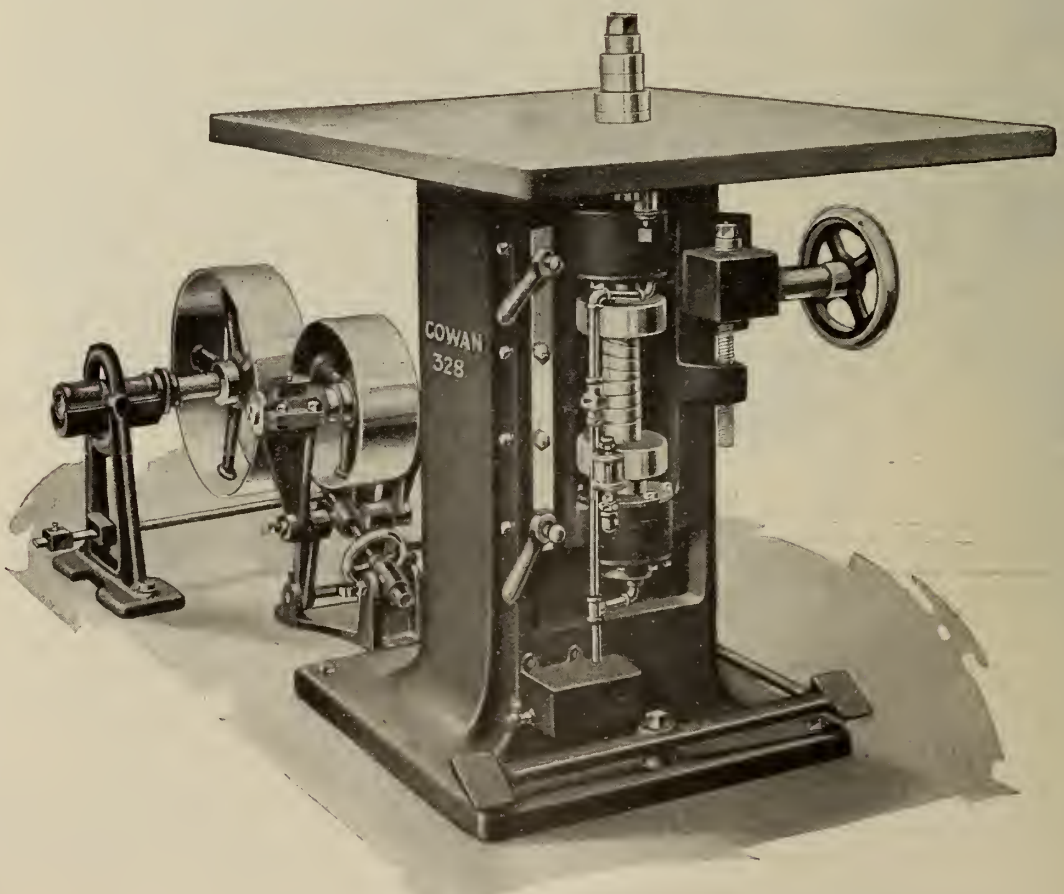
An adjustable speed motor head lathe, ball bearing equipped



Ball bearing tenoner



Motor driven saw bench with ball bearing saw arbor



A high speed ball bearing shaper

oil mainly to protect the highly finished surfaces of the balls and races from rust.

The retention of the lubricant also means that there is no leaking oil to drip on the floor and on sawdust and wood shavings and there create a distinct fire hazard. Neither is there any danger of the bearings running hot as ball bearings are free running and are so housed that dust and grit cannot find their way into the bearings.

Types of Ball Bearings Used in Woodworking Plants

There are three types of ball bearings in general use on woodworking machinery, each type possessing characteristics which fit it best for certain specified applications.Among those is the self-aligning ball bearing which has the exclusive inherent ability of compensating automatically for shaft deflections, the principle of the ball and socket being embodied in the bearing itself. A well known make of self-aligning bearing consists of two concentric rings, two rows of balls staggered in position, and a single retainer for the two rows. The inner race has two parallel grooves, the curvature of which closely conforms to that of the balls. The outer race is ground in the form of a hollow sphere with its center in the center of the bearing, permitting the inner space, balls and retainer to operate at any angle within the outer race to compensate for shaft misalignment.

The balls, which are true in both size and sphericity to within plus or minus one half of one-thousandths of an inch, roll on the surfaces of the races with a nearly pure rolling motion. The load is distributed over a large number of balls and is equally divided between both rows of balls due to the self-aligning feature of the wearing.

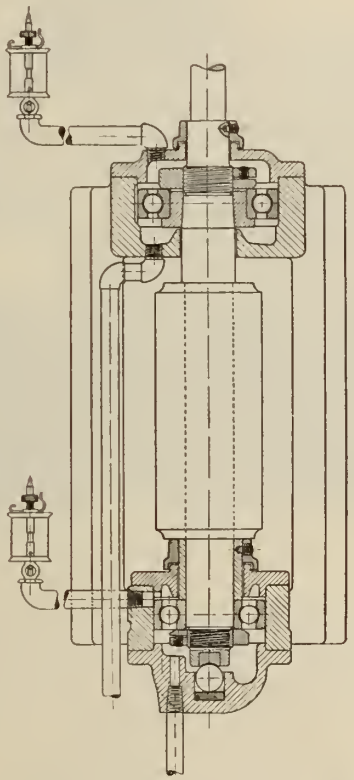
Boring machine with horizontal driving shaft mounted on ball bearings

The deep-groove ball bearing is characterized by deep, uninterrupted groove construction. Both races have a deep uninterrupted groove with a symmetrical "U" shaped cross section which permits the bearing to carry very heavy thrust loads in either direction in addition to a radial load. This permits either face to be applied to the load and makes the bearing foolproof in assembly and reversible in practice. At high speeds the thrust capacity is a high percentage of the radial rating and at low speeds it exceeds the radial rating.

The heavy rings of uninterrupted cross-section are susceptible of great accuracy in manufacture, an accuracy which is easily maintained in service while the curvature and depth of grooves permits a relatively large contact area when under load, which means increased capacity.

Thrust Ball Bearings

Thrust ball bearings are made either of the single or one direction thrust type, or of the double or two-direction thrust type and with either flat or self-aligning seats. They are employed wherever heavy and continuous thrust loads have to be supported and under no circumstances can they be used to sustain radial loads.



High speed shaper mounting

The distinguishing feature of the thrust bearings is the design of the raceways. The groove or raceway is arranged in a plane at right angles to the shaft axis and is ground concentric with the bore of the bearings to a radius slightly larger than the radius of the balls. Of special interest is the self-contained and self-aligning double thrust bearing which makes mounting easy since only one part has to be handled against the multiplicity of parts of other double-thrust bearings.

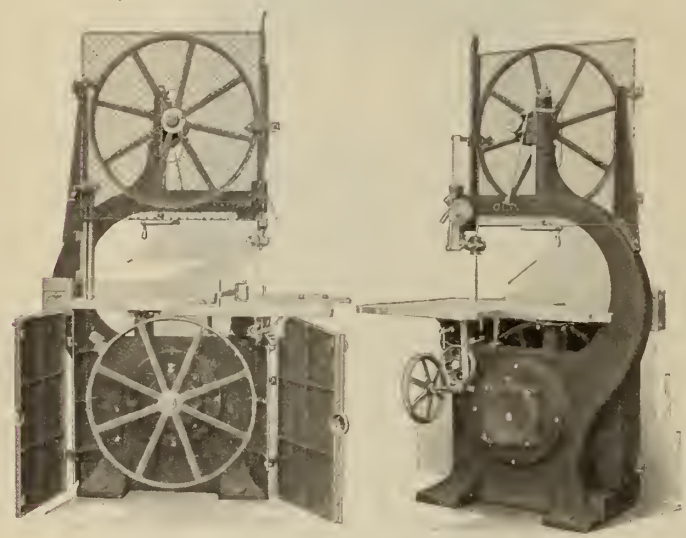
Some of the advantages of these types of ball bearings as applied to woodworking machinery of various kinds are outlined below. As conditions on woodworking machinery of various kinds differ considerably, the selection of the proper type of bearing is a technical matter which can be solved to best advantage through close co-operation with the bearing manufacturer.

(To be continued)

Machinery & Equipment

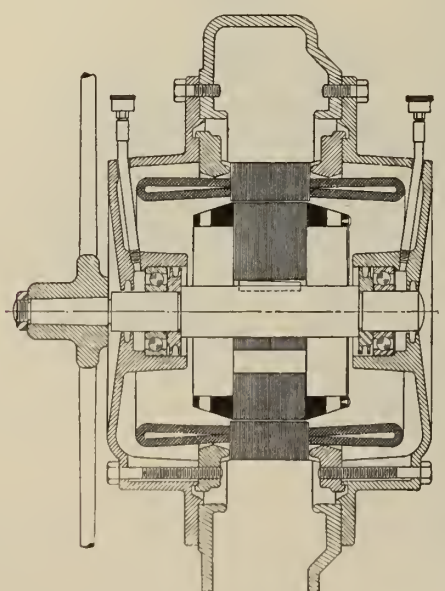
A Direct Motor Driven Band Saw

What is an innovation in band saw drive practice, has been introduced by the Oliver Machinery Co., Grand Rapids, Mich., in their new "motor-on-shaft" band saw No. 16. The special feature of this equipment is the direct motor drive wherein the rotor is keyed directly to the lower wheel shaft which runs



Front and rear views of Oliver motor-on-shaft band saw

in two ball bearings supported by the two end bells. These end bells have finished concentric tongues which accurately fit inside of the finished rings of the band saw frame as well as the stator, assuring perfect alignment and easy accessability. This direct drive



Cross Section of motor-on-shaft drive

or "motor-on-shaft" arrangement makes for simplicity, efficiency, and ease and silence of running. A band saw of this type is economical of floor space and is quite free from vibration on account of the fewer moving parts. The motor is fully enclosed, but with the fair gap running well up into the column, there is sufficient circulation of air within the enclosure to keep the motor cool. For this type of drive a 600 r.p.m. 2 or 3 phase, a.c. motor is used.

The saw itself has 36-inch wheels and will take work up to 16 inches under the guide. The table tilts 45 degrees to the right and 5 degrees to the left. The regular bearings are of babbit, adjustable and lubricated, but ball bearings will be supplied on order. The machine is equipped with suitable safety guards. In addition to the motor-on-shaft drive, belt, geared, coupled or silent chain drive may be obtained if desired.

Useful Hand Shaper for Woodworkers

For use in furniture factories, cabinet shops, pattern shops, etc., R. L. Carter Company of Syracuse, New York, has recently placed upon the market a very unique and useful hand type shaper. This little device with all its attachments not only supplements the stationary type of vertical spindle shaper in its impossible applications, but accomplishes in many cases the same results much more conveniently, quickly and cheaply.

The illustration shows the shaper as finally developed. This shaper is conveniently designed to fit

Hand type shaper made by R. L. Carter Co.

the hand being only 3 in. in diameter. The motor used is a specially designed Westinghouse type ADS, rated at 1/9 h.p. at 8,500 r.p.m., 110 volts d.c., 25 to 70 cycle a.c.

High grade self aligning ball bearings and liberal brush design permit long life. With the positive ventilating system used on the motor, cool operation is assured even over comparatively long periods of

work. The 45 degree slope of the end bracket combined with the 45 degree angle of the cutter head gives a 80 degree angle for guiding the machine in work. This feature coupled with the high speed cutter results in a finished work that is amazing to the most exacting operator.

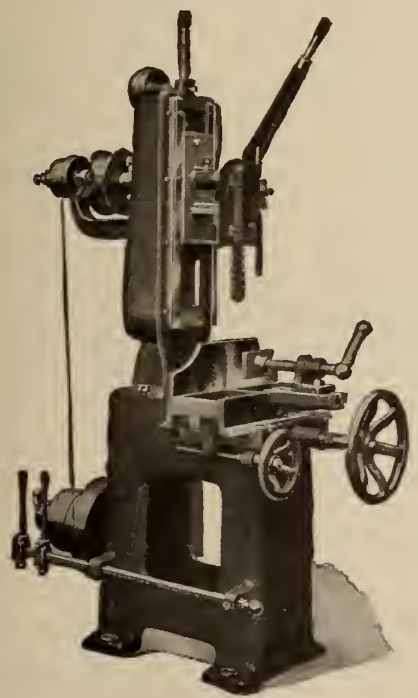
Standard cuts which can be accomplished by single cutters or a combination of cutters are also shown. The cutters are all of five blade design, which insures a clean non-burning cut. The five blade design is such that a 90 degree angle results between the adjacent blades and allows for sharpening on an ordinary oil stone.

Additional features include the threaded micarta non-hydroscopic shell offering a non-tiring grip. Eight feet of super-service heavy rubber cord with standard plug, thorough insulation of the device protecting the operator from annoying shocks and an easily accessible terminal box on the motor by means of which the cord is attached when the motor is in use.

Notwithstanding that the field of application of this device extends into the domain of the die maker, the router and others, made possible by the use of chucks and special tools, the popular demand appears to be universal among furniture factories, cabinet shops, pattern shops, piano factories, boat builders, wheel wrights, wagon and body builders, sash and door works, etc., etc.

Combination Chain and Hollow Chisel Mortiser

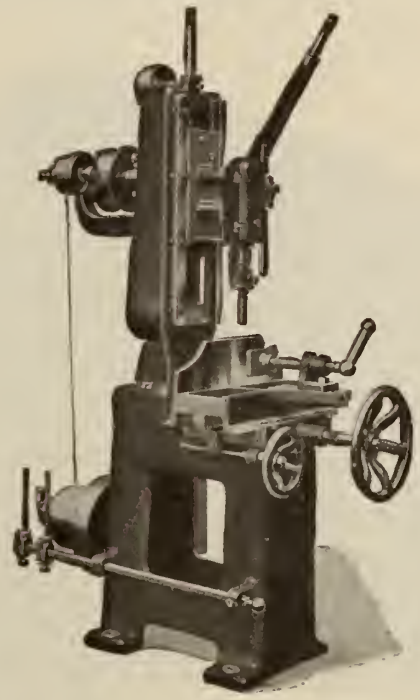
In introducing to the Canadian woodworking trade the Smith chain mortiser with hollow chisel attachment, the A. R. Williams Machinery Co., Limited, Toronto, Ont., are offering a machine that is practically two separate machines combined in one. The machine, which is made in England, is normally a chain mortiser but may be quickly converted into



Smith chain mortiser

a hollow chisel mortiser by means of an attachment which is easily placed in position in about the same time as it takes to change from one size chain to another. This attachment is equipped with Hoffman ball bearings and is driven by a pair of steel mitre gears through the sprocket shaft of the chain mortiser.

The driveshaft of the machine is equipped with a friction clutch which brings the chain mortise head or the hollow chisel attachment into operation as soon as the stroke is started by means of the hand lever, and as soon as the stroke is completed, and the head moves clear of the timber, the clutch is disengaged



Converted into a hollow chisel mortiser

and the machine comes to rest immediately. This arrangement saves a great amount of wear on the chains which is an important feature in the upkeep of a chain mortiser. The chain slide is fitted with a depth gauge for use when making blind mortises. The drive is entirely self-contained.

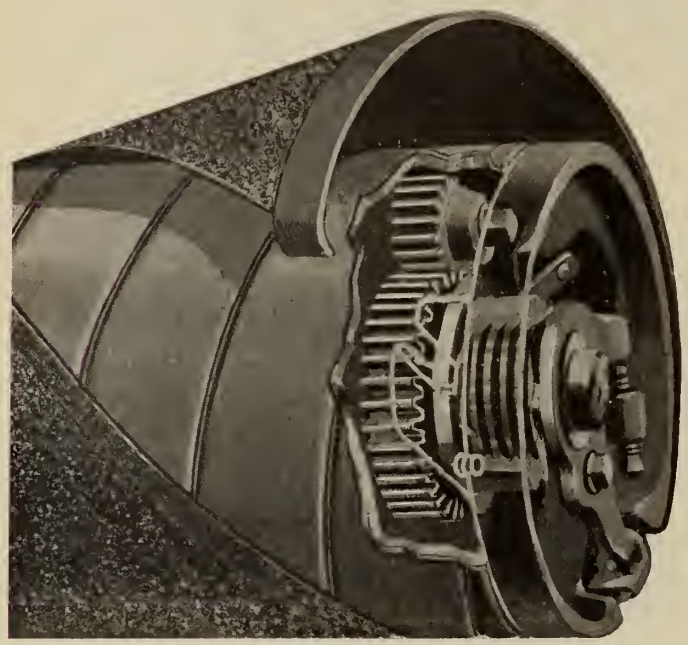
The table is capable of horizontal movement by means of a rack and pinion, and of tranverse movement by means of a hand wheel and screw.

Stretch of Sandpaper on Drum Automatically Taken Up

Devices that increase the effectiveness of drum sanders and reduce the expense of sanding operations are incorporated by the P. B. Yates Machine Co., Limited, Hamilton, Ont., in the spiral drums with which they are equipping their drum sanders. These exclusive features are an arrangement for tightening the paper at each end independently or simultaneously and an automatic take-up device for compensating for stretch of paper during operations. The manner in which these devices operate are indicated in the three cuts accompanying this article.

The Yates spiral drums are an assembly of carefully machined iron cylinders, each six inches wide, mounted on a heavy steel shaft. After being locked together, a spiral groove, just deep enough to allow the sandpaper to lap and make a perfectly smooth surface, is milled on the face. Each section is then balanced independently and hydraulically pressed on the steel shaft. After the drum is turned to size, a

Cut open view of the spiral drum as used on Yates Sanders



Left: Details of the automatic take-up device which compensates for stretching in the paper. Above: Shows the action of the automatic take-up device

small spiral groove is cut in the opposite direction to the large milled groove to hold the wire with which the felt covering of the drum is attached.

The sandpaper is held to two clutches by steel bands, as indicated in one of the cuts. The hubs of of the clutches screw into the hubs of the large gear wheels and by means of a key the clutches may be moved both endwise and spirally at the same time. This pulls the paper in the same manner until it is absolutely tight.

To take care of any stretching which develops during operation, an automatic take-up device is provided. In Fig. 3 the manner in which it works is illustrated. In that cut (1) shows the clutch with the sandpaper attached; (2) shows the space between the clutch and the end of the drum caused by the clutch moving outward; (3) shows the edge of the sandpaper and the direction in which the clutch moves. This movement is entirely automatic and is ample to take up all the stretch that may occur.

Changes in Carborundum Company's Representatives

The Carborundum Company announces the appointment of Mr. Harry Collinson as district sales manager in charge of its Milwaukee, Wis., office and warehouse. Mr. Collinson assumed this position on May 1st, succeeding Mr. J. H. Jackson, resigned.

Previous to this appointment Mr. Collinson was sales representative of the Carborundum Company in the province of Ontario. In this position, he will be succeeded by Mr. C. E. Bowman, lately connected with the sales department of Norman Macdonald, who has the agency for Carborundum products at Toronto, Ont.

P. B. Yates Passes Away

P. B. Yates, founder, president and general manager of the P. B. Yates Machine Co., Beloit, Wis., with a Canadian branch at Hamilton, Ont., passed away recently in a Chicago hospital where he had been undergoing treatment for some weeks. Pneumonia, following a general break-down, was the cause of his death.

Mr. Yates was 69 years of age, and the great industry which he built up is a credit to his genius, foresight and management. He began in a modest way with only one model of machine and with a factory force of thirteen and a sales force of one lone man. To-day its plants at Beloit, Wis., and Hamilton, Ont., are among the largest in the world devoted to the manufacture of woodworking machinery.

The management of the P. B. Yates Machine Co. announce that the plants will continue operations in the manufacture of woodworking machinery under the old policies without change.

Forest Products Engineering Co. Expand

In order to meet the growing demand for the type of service which the Forest Products Engineering Co. is rendering to the woodworking industry, they have enlarged their office quarters in the Manhattan Building, Chicago. They now occupy suites 500-506 in that building.

Upholstering and Trimming

Method of Upholstering a Chaise Lounge

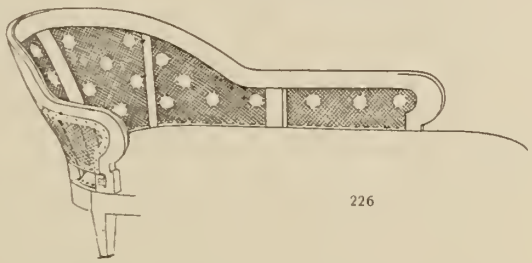
How the Back is Stuffed and Covered—A Luxurious Type of Upholstery Designed for Utmost Comfort

The next step is the preparation of the back for springs. First of all the sharp edge of the inside of the frame is removed with a rasp as suggested in Fig. 225. A wire support for the bottom of the back is attached at a sufficient distance above the seat, and to this the bottom of the burlaps which support the springs is sewn. Webbing and burlaps are placed on the outside of the back and a sufficient number of pillow springs sewn thereto as shown in Fig. 226.

These pillow springs are tied down and the whole covered loosely with burlaps sewn to the tops of the springs as shown in Fig. 227. Fig. 227 also indicates the marking for tufting.

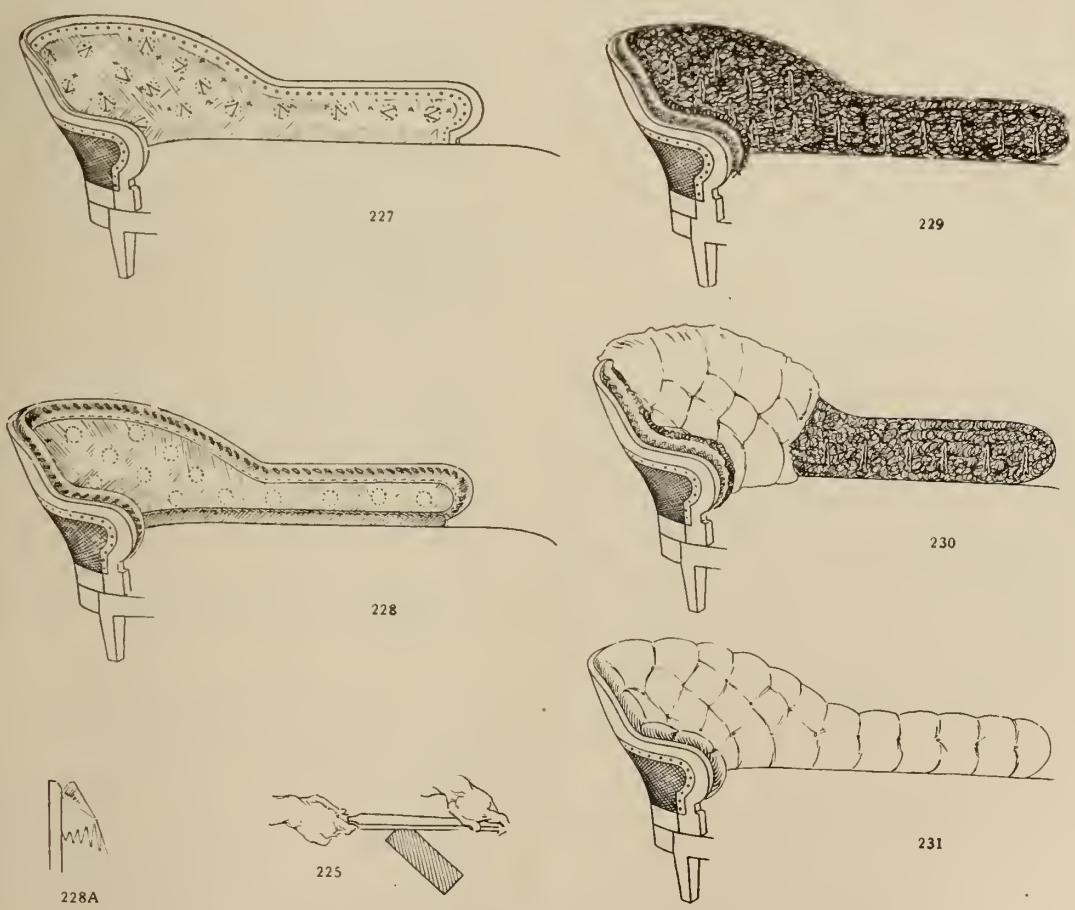
Next, a stitched edge is constructed around the edge of the frame as shown in Fig. 228. This edge is stuffed very lightly and given a single stitch.

Where the outer lines of the stitched edge attaches to the frame a recess is provided as shown in the cross section, Fig. 228A. This recess is intended to give the appearance of a loose cushion, therefore this crevice must be kept uniform all around the back.



Webbing and pillow springs are placed on the back

A roll is also placed around the bottom of the back as shown in Fig. 228. It is a matter of choice whether this roll is put on before the springs are put



Details of upholstery operations as applied to a chaise lounge

in or after the springs have been covered with burlaps. We show it here after the springs have been covered, because it offers less interference with the action of the pillow springs.

A down cushion is next constructed, using the button marks of the back, as at present outlined in Fig. 228, as the basis of calculation. A pattern is made from these calculations and the cushion planned out in two sections, one section for the main back as shown in Fig. 230 and another section for the smaller part of the back. These sections are filled and marked for buttoning with the necessary allowance between buttons.

Where the back button marks are indicated on the burlaps (Fig. 228), sew through, at each mark, about a foot of stitching twine, leaving the ends loose so that they can be used eventually for the tying in of the down bag.

A hair filling is next applied between these twines, still leaving them free for subsequent use.

After the hair has all been put in place, Fig. 229, the down cushion for the large section of the back is tied into place using the tufting twines that have been left projecting through the hair for that purpose. An allowance of one-half inch for fullness does not permit of the formation of complete pleats but is sufficient to indicate a semi-pleated condition which is all that this type of lounge requires.

When the main section has all been tied into place the next section is joined thereto and the edges finally sewn down all round, creating the appearance shown in Fig. 231.

In the finishing of this piece a heavy cord is inserted in the crevice left by the stitched edge around the back, also in the crevice between the nosing and the upper band around the frame, making a final finish as indicated in Fig. 217.

This type of upholstering is perhaps the most luxurious that can be conceived and particular care should be taken to keep the entire work as soft as possible without sacrificing uniformity of contour which is co-essential with the matter of comfort. For this reason it is advisable not to use buttons for tufting but rather soft French knots made from the fabric of the covering. These are literally little pieces of gathered fabric sewn at the back and trimmed close.

Upholstered Furniture Makers Meet

The National Association of the United States Discuss Conditions in the Trade — Transportation and Crating Problems Considered— Davenport Manufacturers Also Convene

Some very important business was carried through by the National Association of Upholstered Furniture Manufacturers at their annual meeting in Atlantic City on April 10th, 11th and 12th. The important features of the proceedings were a review of vital conditions in the industry, a discussion of the prospects, present and future, and technical papers on phases of upholstered furniture manufacture

Ralph F. Windoes, the executive secretary of the Association, presented a report which was very illuminating. The first part was devoted to a review of conditions obtaining in the upholstered furniture industry, while the second portion was a discussion of the trend in costs. This part of Mr. Windoes' address, which created considerable discussion, was illustrated with charts which graphically indicated the variation in the costs of the different materials entering into the manufacture of upholstered products. Such commodities as 4/4 No. 1 common birch, 8 oz. burlap, XXXX moss, tapestry, plain mohair, and cotton velour, were represented as well as piece-work rates on chairs and sofas. The charts demonstrated that while upholstered furniture manufacturers are exerting every means within their power to keep the prices of the fabricated article low, those advances that have been made have been entirely justified.

The report of the treasurer of the Association showed that the organization was in a very satisfactory condition financially. J. L. Maltby, cost accountant of the Association, reported that the rising costs of labor and material were the reasons that manufacturers did not make as much profits as they expected.

Resolutions

Mr. Windoes then read the resolutions which were presented by the executive committee to the convention for action. The first resolution concerned marking of goods and was as follows:

> "Appreciating the saving in time that would be affected if manufacturers of upholstery fabrics would mark their goods with consecutive yardage markings, we therefore resolve, That we respectfully urge all such manufacturers to so mark their product at the earliest date possible."

The resolution was adopted unanimously. The convention adopted a motion to send a copy of it to the United Upholstery Manufacturers Association of Philadelphia and to the jobbers.

A resolution protesting against the efforts made in a number of states to eliminate the use of the spray gun was also adopted. The resolution follows:

> We, the National Association of Upholstered Furniture Manufacturers, in mass meeting assembled this eleventh day of April, 1923, go on record as condemning the recent activities of state legislatures in their attempts to pass laws to prevent the use of spraying devices for finishing purposes and instruct the secretary and executive committee to use all the resources at their command to prevent the passing of such harmful legislation in the future.

Definition of Shellac

The convention adopted the following resolution regarding shellac:

> Whereas, The term "shellac" has been applied not only to products composed of shellac gum dissolved in alcohol, but also to compounds of shellac and other materials; and Whereas, This practice, if continued, will result in the debasement of the term "shellac," confusion in trade and deception of purchasers;
>
> Now, therefore, be it resolved, that the term

"shellac" on labels or on advertising means only shellac gum cut or dissolved in alcohol;

That if such shellac be reduced, reinforced or modified, the term "shellac' shall likewise be modified by the addition of the word "compound" in conspicuous letters;

That if the shellac content be less than 50 per cent. of the solid content by weight of the material, the word "shellac" shall not be used on labels or or advertising except as apart of the formula, if printed, except in connection with the word "substitute" or "imitation";

And be it further resolved, that this information shall be plainly shown on all containers, bills, contracts and letters of quotation.

It is recommended that products containing less than 50 per cent. by weight of shellac be sold under arbitrary trade names or brands.

Transportation and Packing

An important address was that of C. C. Bather, commerce counsel, who discussed the transportation situation. He declared that something should be done to help rehabilitate the workers inasmuch as there did not appear to be much relief in sight for the present conditions under which the railroads are operating. They were not able to take care promptly of all the freight that is offered them and this was working to the detriment of shippers. Mr. Bather urged manufacturers to take more interest in the rates on raw materials coming into their factories and on the fabricated articles going out. He claimed that the average manufacturer does not pay close enough attention to the details of freight rates.

Another excellent address was given by Albert W. Luhrs, engineer for the Freight Container Bureau of the American Railway Association. He discussed the proper packing of furniture, mentioning that the American Railway Association had embarked on a two-year investigation of this subject because of the constantly mounting claims for damages. Last year he said the railways paid out over $100,000,000. compensation for damage. Mr. Luhrs explained the nature of the tests which were made on furniture crating and recited the conclusions which could be drawn from them. Finally by means of pictures he showed how proper crating should be carried out.

"Insects that Attack Furniture and How to Destroy Them," was the subject of an illustrated address by E. W. Back of the Bureau of Entomology, U. S. Departmet of Agriculture. His remarks were largely an exposition of the investigation of tests made by the Bureau in an effort to exterminate the moth.

A round table discussion closed the convention. It was shown that all plants were operating in a satisfactory condition with from five to eight weeks' business on their books.

The election of the officers resulted as follows:— President, J. L. Schnadig, Chicago; vice-president, Carl F. Streit, Cincinnati, Ohio; treasurer, L. L. Valentine, Chicago; and executive secretary, Ralph F. Windoes, Chicago.

Davenport Bed Makers Meet

On April 12th the Davenport Bed Makers of America also met in Atlantic City under the chairmanship of Frank J. Seng, who in his presidential address showed that shipments from firms represented in the Association were 90 per cent. ahead of the first quarter of last year, 100 per cent. ahead of the same quarter in 1921 and 41 per cent. ahead of 1920.

"The Ever-widening Market for Davenport Beds" was the subject of an address by Lloyd Maxwell, president of Maxwell McLaughlin & Co., Chicago. National advertising was declared by Mr. Maxwell to have directed widespread attention from other Associations and to have carried the message into three out of every five homes in the country, helping the dealer collect the dollar that otherwise would go for an automobile or other commodity.

Charles C. Parlin, manager of the Commercial Research Division of the Curtis Publishing Co., Philadelphia, spoke on "Problems in Association Advertising," saying that people were more appreciative now of the message from the printed page and that properly conducted advertising had an immense appeal. He stated that effective advertising must appeal to the reader's self-interest, that it must be attractive and must display the product in its most effective way. He declared that the best advertising comes from the purchasers and journal advertising should reinforce them so that salesmen will be made out of the customers. Mr. Parlin showed how the use of advertising was establishing closer relationships between dealer and manufacturer, and how it was creating a potential market to cash in on which was the practical problem which must be worked out. He dwelt on the necessity of tying up national advertising with proper sales effort and window displays.

"How We Are Finding New Customers for the Davenport Bed" was the subject of an address by Randolph Branner, manager of the Davenport Bed Makers of America. This year he said the Association advertising is being concentrated on salient facts whereas last year it was more general. Mr. Branner spoke of the results secured through the different advertising media and the markets that could be best cultivated at this time, stating that the hotels offered a real market at the present time. In his opinion, the future for the industry was brighter than ever.

Veneer Producers Meet on June 12 and 13

June 12th and 13th have been selected as the dates for the next semi-annual meeting of the National Veneer and Panel Manufacturers' Association. The convention to which all veneer and panel producers will be invited, will be held in the Auditorium Hotel, Chicago. The detailed programme is now in course of preparation but in general, the massed sessions will be held in the forenoons and the groups in the afternoons. Mr. M. Wulpi, commissioner announces that the costing efforts of the Association are going forward and the cost engineer's work is becoming more and more appreciated through the results obtained in cost installations.

Enquiry for Birch

A firm in London are anxious to get in touch with a first-class shipper of birch planks and logs from the Quebec district. For further information write the editor referring to enquiry No. 1625.

FISCHMAN
TRADE MARK
SPRING COMPANY

Quality Spring Goods

for the Manufacturer and Upholsterer

Fischman Ventilated Spring Mattress.
Fischman Ventilated Box Spring.
Fischman Ventilated Combined Box Spring and Mattress.
Fischman Ventilated Spring Pillows.
Fischman Spring Upholstering Cushions.
Fischman Upholstering Constructions.
Fischman Spring Rosettes.
Fischman Ventilated Chair Pads, Etc., Etc.

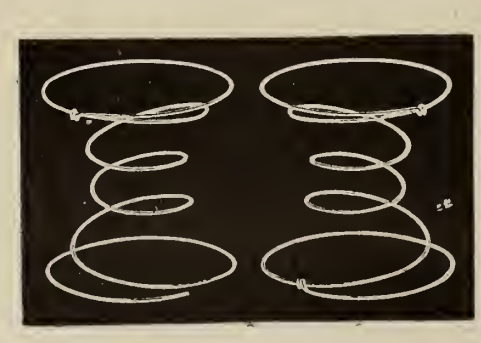
Fischman products enjoy an enviable reputation for consistent high quality in all lines. They are the choice of manufacturers and upholsterers who take pride in the superior construction of their furniture. Get our prices.

Fischman Spring Co.

KITCHENER — ONT.

"IDEAL"

FURNITURE and UPHOLSTERY SPRINGS



Double or single cone, plain or knotted ends, in any height, shape or gauge of wire.

All "Ideal" Springs are made of "Premier" Brand—the best steel spring wire obtainable. Before shipping, the springs are japanned and heat-treated, giving an enamel finish and making the spring more resilient.

Catalogue and prices on application.

MADE IN CANADA by

Ideal Fence & Spring Co.,

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A Better FINISH

You can improve the appearance and durability of your finishes and increase the saleability of your furniture by using

Cosmos High Grade Lacquers and Lacquer Enamels

Lacquer gives a permanent, waterproof surface that is tough and durable.

It dries rapidly, increasing the output of the finishing department. Successive coats may be applied at half-hour intervals, enabling work to be finished in one day.

Samples, prices and other particulars gladly furnished.

Our Specialties:

METAL LACQUERS
WOOD LACQUERS
ENAMELS
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EUREKA AIR BRUSHES
AMYL-ACETATE
REFINED FUSEL OIL
COLLODION
BRONZE POWDERS
MATCHLESS METAL POLISHES AND BUFFING COMPOSITIONS
BANANA OIL

Cosmos Chemical Company

Port Hope Ontario

A Double-Deck Varnish Drying Room

Suggested Modifications in the Layouts of Finish Dry Kilns to Secure More Efficient Drying Action

By A. R. Duff*

In Circular No. 69 of the Bureau of Standards, Washington, D.C., attention is drawn to the fact that the drying of oil paints and varnishes is not solely the evaporation of the vehicles or solvents present. In such coverings as water-paints or shellac cut with alcohol, the drying is an operation consisting of simple evaporation, but with oil-paints and varnishes, it is different. The drying oil present in these latter coverings does not evaporate, but undergoes a chemical change. It first becomes tacky and finally sets to a hard film. In becoming hard the oil absorbs oxygen from the air. To supply another source of

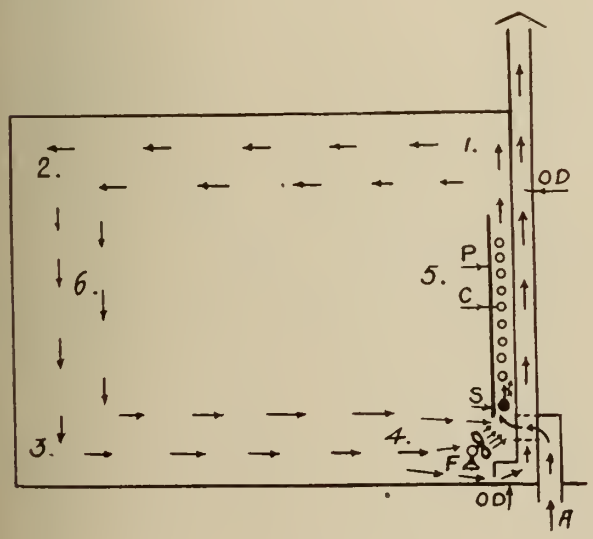

Fig. 1

oxygen to hasten the oxidation or drying of the oil, oxides of lead and manganese are added. These are called mineral driers. Varnish cannot be rubbed and polished until the oils present have oxidized and hardened, and heat alone will not accomplish this. In a varnish there is usually present a gum, a solvent, a drying oil and a mineral drier.

To accelerate the drying of varnished stock it is necessary to have controlled heat to evaporate the solvents present; fresh air to oxidize the drying oils; humidity to prevent surface checking, and a positive circulation to bring the tempered air into contact with all the articles to be dried and to carry the evaporated solvents to the outlet vents.

The essentials then of a varnish dry-kiln are:

(1) A closed room.
(2) A fresh air inlet.
(3) A foul air outlet.
(4) Heating coils.
(5) A steam spray humidifier.
(6) Fans to assist the natural circulation.

The arrangement and control of all of the above

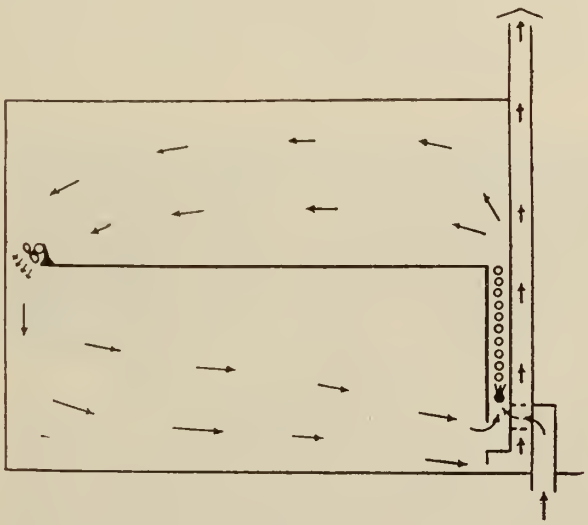

Fig. 2

should be such as to give uniform conditions all over the room. Fig. No. 1 suggests how such a room may be constructed.

A partition (P) is placed in front of the heating coils (C) to prevent excessive radiated heat from injuring stock placed close to them. This partition also forms a chamber in which the steam spray, the fresh air and the recirculated air are mixed before being circulated through the room. The fresh air inlets or vents (A) are placed so that the fresh air must pass the heating coils and steam spray before being circulated. The spent air outlet vents (O.D.) are placed on the floor under the heating coils where the air has made a full circuit of the room and is ready either to recirculate or be discharget to the outside. The steam spray humidifier (S) is placed beneath the heating coils and above the bottom of the partition so that the air passing behind the partition is conditioned before circulating through the room. The electric fans (F) are placed in such a position that they accelerate the existing natural circulation. The conditioned air rises behind the partition and follows the path indicated by the arrows.

While a kiln of the design indicated would be a decided asset to most furniture manufacturers, a study of the circulation in it indicates that a further

*This article is based on the researches which Mr. Duff, who is associated with the Furniture Manufacturers' Association, has carried out under the auspices of the School of Engineering Research of the University of Toronto and is appearing in a bulletin of the School.

modification should increase its efficiency: The air rising through the coils behind the partition is heated and ascends to the ceiling. As the air travels from (1) to (2) it loses sufficient heat to cause it to descend to (3). Then from (3) to (4) it travels through the furniture to replace the air which rises over the surface of the heating coils. The air would not have descended to the floor to pass through the furniture, had it not lost heat in the ceiling and walls. If, therefore, a platform were built from (5) to (6) the circulation would not be essentially changed. Above the platform the air would still travel from (1) to (2) and below it, it would still travel from (3) to (4). The air above the platform would be warmer and hence would dry more efficiently. Why not make the varnish dry kiln double-decked and obtain nearly double the efficiency? Fig. No. 2 suggests how this might be accomplished.

The varnish dry kiln is usually on the top floor where the ceiling of the kiln is the roof of the building. Any heat lost to the roof or to the walls is not available for the evaporation of the solvents or the speeding up of the oxidation reaction. The ceiling, therefore, should be low and both it and the walls tight and well insulated.

The varnish dry kiln of The North American Furniture Company, Owen Sound, Ontario, has been modified in accordance with Fig. No. 1 and the results now being obtained are quite satisfactory.

Proper Finish for Walnut

Recommendations of the American Walnut Manufacturers' Asscoiation— Standard Formulas

The fundamental reason why cabinet woods are finished is to seal the surface of the wood, which prevents absorption of moisture that is responsible for shrinking, swelling, warping or checking. While walnut is less subject to such changes than other woods, nevertheless it must be remembered that the furniture of a single factory may be shipped to all parts of the United States and be subjected to widely varying heat and moisture conditions; therefore, a good finish that seals the surface is always desirable.

The finish also guards against decay and insect attacks, although walnut is singularly free from such enemies. The finish on walnut also serves to bring out the beautiful texture and figure of walnut. It also makes it possible to have as light or as dark a shade of walnut brown as is desired or such contrasting effects as we note in "two tone" finishes.

How to Select a Walnut Finish

In the majority of cases it is well to choose what is known as the natural walnut finish when it comes to color. Extremely light color must be obtained by a bleaching and unless desired for matching something else, is not recommended. Very dark finishes are not desirable because to obtain them it is necessary to darken the wood with stains which, if too dark, conceal the natural beauty of the color and figure of the wood. The best shades are the natural color and the very slightly darker shades that display the natural beauty of the wood. Very dark finishes make the identification of the walnut more difficult and the substitution of other woods more difficult to detect.

There are two styles of finish to be considered in addition to the consideration of color. These are known as the "polished' and "dull" finishes. The advantage of the high polish is that it displays the beauty of the wood to the very greatest advantage, giving it a very rich appearance. The disadvantage lies in the fact that such finish is more likely to be marred by "knocks," scratches or hot dishes. Severe accidents to a highly polished piece are difficult to mend and often require refinishing. The dull finish if not made too dark can be very rich in appearance while it is much less subject to damage and can be repaired more easily if damaged.

Modern Finishes

In the olden days all furniture was made by hand and in small quantities. The craftsman did not need to consider expense or time. As a result he used the purest materials for finishing, took lots of time and expended a great deal of hand labor. These conditions produced somewhat better results than are obtained in the average furniture factory, but the best of our modern factory finishes are perfectly satisfactory and it is well to remember here that their product goes to the people instead of just to kings and royalty. The American furniture manufacturer has made it possible for the artisan to have in his home walnut furniture that compares not unfavorably with palace furniture of a hundred years ago.

How to Finish Walnut

In the following we give directions for applying the dull rubbed or eggshell finish to American walnut. This finish is more generally applied at the present time than any other.

First sponge the wood with water. When dry, usually after eight hours, sand smooth with 000 paper and dust thoroughly. Stain the wood with a water stain obtained from reliable source, either in powder or liquid form, calling for walnut stain—standard shade; it is easier to buy the powder and dissolve according to the maker's direction.

When sap wood is encountered apply regular stain to sap parts and when dry go over entire work with same stain, blending out where the work remains too light by going over the work with a brush which has been shaken out so that it contains little stain. Allow to dry after eight hours or over night.

Then fill over all with brown filler; allow filler to show dry on top, then pack into the pores thoroughly by rubbing with rag or waste, crosswise of grain. Allow the filler to dry forty-eight hours. Of course it is understood that in packing filler the rubbing crosswise cleans it off.

Now apply a coat of pure white shellac. Allow to dry over night, then sand lightly. Follow with two or three coats of varnish, allowing plenty of time between coats, usually three days.

Sand each coat lightly with fine paper and dust thoroughly. The final rubbing coat should stand three or four days before rubbing. For rubbing use 3-F pumice stone and light rubbing oil (paraffin oil). Use a medium hard felt and be sure to rub with the grain, easing up pressure on end of stroke, so as not to cut through edges.

Clean off excess oil with clean waste or very soft rags.

Varnish finished should never be dusted with

pressure. We can assume that ninety per cent. of present day pieces are flat or "dull rub" finishes. If using so-called dustless duster, always wipe off with the grain of the wood. If dusted with a brown duster, do the same. Remove finger marks with moist cheese cloth rag on which a few drops of some good furniture cleaner have been applied.

Stroke or wipe with the grain and the surface will appear smoky from the moisture. Then clean off with a new, soft, but absolutely clean rag. Remember that too much friction brings back the polish, and in a few years time, if too stringent application of the cleaner is employed, the furniture will almost be a high polished surface instead of a mat surface.

Open-pore finishes, as a rule, are shellac and wax or wood lacquer and wax. Clean these by putting a bit of wax on a turpentine cloth and wiping the same way and then rub briskly back to a polish.

There are in existence many old pieces that might be called antiques built of walnut in which some of the construction is represented in beautiful pieces of burl, crotch or stump wood, that perhaps would look much better if they were finished in a French polish. There is nothing that will bring out the beautiful figures like an elegant French polish applied by an expert at this work.

A good job of waxing can be kept in good condition by cleaning the piece with a soft cloth on which there is a bit of wax.

* * *

The formula for standard American walnut stain is as follows:

Loutre	1 ounce
Brown mahogany	½ ounce
Acid yellow	1 ounce
Sulphur brown	12 ounces
Lye (Babbitt's or Lewis')	½ ounce

Two and one-half (2½) ounces of stain powder to one gallon of water.

For using this the following directions are given: Give the work a good coat of this stain, when dry, a coat of shellac, using about one part of shellac to two or three parts of alcohol. Then sand (before filling) with fine or old sandpaper. Filling to be colored with Van Dyke brown or made as near to the color of the wood as possible.

If the work should be too light after filling, stain it with the same stain before shellacing. Use half white and half orange shellac, and two or three coats of varnish. Rub dull.

These colors may be obtained from any stain house. Especially will the correct shades follow when your order specifies that they are desired to make standard American walnut finish.

Before this standard formula was given out, a universal formula as follows was used:

Walnut crystals	12 ounces
Carbonate of soda, dried	½ ounce
Water	1 gallon

Directions—Use hot water for making the solution and strain the same when cool, or pour off the clear liquid. One coat usually will do the work. It is a matter of choice as to the filler, but a dark, rich brown is preferable. Finish in the usual manner.

In some factories, where the standard is not a requisite shade, the use of a weak solution of blue nigrosine is all that is required. But in this case, a toner made up of loutre, yellow and brown is used for blending purposes.

Duo-Tone by Electricity

Electric Line Cutters Increase Production of Duo-Tone Panels and Do Better Work Than Hand Carving

A great many furniture manufacturers are installing electric line cutters for cutting the ornamental dividing line on the popular duo-tone styles. Some are also using them for cutting coves, others for spline grooves for cane chair seats, etc.

For duo-tone panel work, patterns are prepared as usual. The operator guides, the tool over the pattern and the specially-shaped high speed bit cuts a perfect line, smooth and uniform. There is no gouging, tearing or slivering to these operations.

The electric line cutter is not only convenient and simple of operation, but owing to its ability to do this line cutting eight to ten times faster than a hand carver, it commends itself to every manufacturer making duo-tone patterns on a production basis.

Cutting lines in duo-tone panels with an electric tool

The accompanying illustration shows the operation of an electric line cutter in the factory of the Imperial Furniture Co., Rockford, Ill.,: who claim that their production is eight or ten times as great as when the panels are handled by hand carvers. They also state that the line is cut cleaner and is absolutely uniform in width and depth. Lining the head and foot boards is always a tedious and costly job when done by the hand carver but with an electrically driven cutter it becomes a simple operation done quickly and at minimum expense.

The Western Planing Mill and Woodworking Association will hold its annual convention this year in Portland, Oregon, on August 22nd to 25th. The Multnomah Hotel has been selected as the headquarters. The programme is in course of preparation and is being handled by C. D. LeMaster and George M. Cornwall, president-manager and secretary-treasurer respectively.

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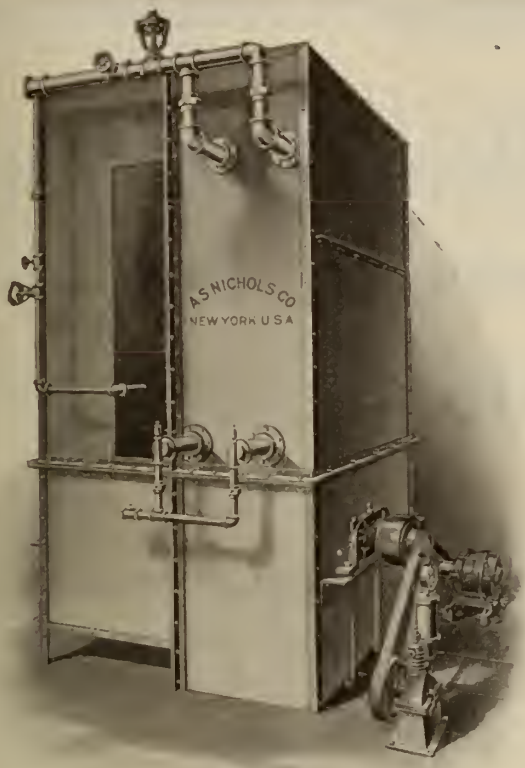

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Veneers and Panels

Requisites of a Successful Veneer Matcher

Common Sense and Good Taste Should Govern the Jointing of Veneers—What Constitutes Good Matching Practice

By Onlooker

In the last issue of the "Canadian Woodworker" the writer had some remarks to make on the subject of jointing and matching what are known in the trade as "walnut butts," and in the course of those remarks stated that common sense is more needed in the matching of veneers than a highly developed artistic sense.

There have been numerous references lately in printed matter on veneering subjects regarding this need of an artistic sense. One writer says: "The man who makes his mark in the world of matching up face veneer and figured work must have a sort of two-fold gift. One is a gift for recognizing color and figure harmony and assembling different parts to blend harmoniously, and the other is a matter of art, of developing the artistic sense or a knowledge and understanding of what constitutes art in the assembling of various elements of beauty."

While I have never placed very much importance on the need of an artistic sense, I suppose it is a necessity, in a measure, if the the ability to picture a piece of work as it will appear when finished can be called artistic sense. Yet I think almost any intelligent mechanic has all of the artistic qualifications necessary to make a success of veneer matching, given a little practice.

There are, of course, men who are color blind, although I never credited it until I met one of them, and they would certainly be out of place at a veneer matching bench. You will find an odd mechanic also who fails to appreciate the indifference in figure between two pieecs of veneer. One of these comes to mind now. He was an old Scotchman, an excellent mechanic, and as reliable a man as could be found anywhere. He had charge of the veneer matching department of a piano factory, but before he was placed in charge the other men in the plant, particularly in the cabinet room, had some interesting experiences with him.

When one of the cabinet makers would ask him for a piece of veneer to reveneer a defective piece of work and tell him it must be the same wood as that on the particular job it was for, Mac could not seem to get the idea through his head that what the cabinet maker meant was a piece of veneer from the same log. He would hand him a piece of walnut or mahogany, whatever it might be, and when the cabinet maker would insist that it was not the same wood as the job he had to repair Mac would be dumfounded, and would protest, "No the same wood? Aye it's the same wood."

For a time we thought he was hopeless, but later developments proved it to be a failure to comprehend some of the terms in use in a new country. When he grasped the fact that by "the same wood" was meant the same log he developed into an excellent veneer matcher. An examination of the expression shows how it might be a trifle mysterious to a new comer, although it is plain to anyone working around a plant.

No Definite Rules for Veneer Matching

It is almost impossible to lay down any hard and fast rules for the guidance of the new comer to the veneer matching department. There have been a great many don'ts from time to time in trade papers which, if taken too much at heart, make the job appear very difficult. One of them is that veneer should never be reversed, but should always be glued with the concave side to the corestock. This is a good rule, generally speaking, but there are times when much better results can be obtained by violating it.

We will take the case of a core twenty four inches wide when it is necessary to make a centre joint. This will require two pieces of veneer about twelve and a half inches wide, to allow for jointing and a little overhang in case of slippage in the press. Now almost invariably in a piece of veneer twelve inches wide there will be considerable difference in the figure at the two edges. It is, therefore, usually out of the question to take two of these pieces and joint them by their opposite edges. One edge may be quite fancy and the other comparatively devoid of figure.

This leaves only two ways of doing it. You can either take two pieces, lay them down on your tacking board or the table of the taping machine and turn one piece over. In this way you will joint the two figured edges but one of the pieces will be reversed or wrong side out according to some writers. The other way of jointing these two pieces is to turn one piece end for end. This will give you the two figured edges together, and, in addition, both pieces will be right side up.

Generally speaking the latter is the one I favored and used when I was engaged at Veneer matching. But there are times when the figure of the veneer would absolutely preclude this method if the matcher had any artistic sense. I have used that expression although I consider it a trifle extravagant. The point I always had firmly fixed in mind when matching veneer was to make the joint as inconspicuous as possible. If a man will keep this in mind when he is matching and endeavour to make his work look as nearly like an unjointed piece of stock as possible he can forget the artistic part of it. The foregoing applies to mahogany and straight walnut. By straight walnut I mean walnut that is not butt jointed.

Jointing Butt Stock

Butt jointed stock calls for a little more care in the matching than straight stock, but it is an easy matter for anyone with a decent eye in his head. The

rule regarding reversing the veneer must go by the board in matching up this class of goods. One piece must be laid wrong side out.

One rule I would lay down for anyone jointing butt stock is to always joint two sheets as they lie next to each other in the log. The reason for this is that while the same pattern exists all the way through the log it is largest in the centre where the figure is most prominent. In other words the pattern gets smaller in each sheet the further away you get from the centre of the log. Therefore, if you joint two sheets that come next to each other the difference in the size of the pattern will be so slight as to be not noticeable, but if you joint two sheets that were at some distance from each other in the log the pattern will be smaller on the one than the other and the lines of the pattern or figure will not intersect. The result is an unsightly job.

The only other rule that can be laid down is to always trim the two sheets that are to be jointed at the same time. That is, the same amount should be trimmed off the ends that are to be jointed. If this is not done the figure will not intersect. The usual method is to trim a number of sheets on the clipper, keeping the ends even. This will insure the same amount being trimmed off, and the proper intersection of the markings making up the figure.

The only other thing to be borne in mind by the matcher is to make a point of arranging the matched stock so that a comparatively plain piece does not come beside a figured piece, and to see that the best figured parts are selected for the most conspicuous parts of the article to be veneered. The veneer matcher should thoroughly familiarize himself with the drawing of the piece he is getting out the veneer for, and also the stock bill. The latter would have indicated on it all the parts to be veneered, including edges.

The edges should have particular attention. I have often seen work veneered with fancy figured stock, but with veneer on some of the most prominent edges practically devoid of figure, clearly indicating that the edges had been an afterthought. That is, the veneer man, instead of taking notice of the edges to be veneered and getting out some figured stuff for them from the same stock as the face veneer, would forget them entirely and then when the workman entrusted with the edge veneering made a request for the necessary pieces there would be none ready and it would be necessary to pick up some plain left over stock.

These are some of the details which, if carefully looked after, get the veneer matcher a reputation for having the eye of an artist. Artist or no artist they certainly make the difference between an attractive and an unattractive piece of work.

How Oak Veneer is Handled

Oak veneer presents some problems not to be found with either mahogany or walnut, but it is not a difficult job to make a success of jointing oak if judgment is used. Sliced oak is something I have had very little experience with as the plant I worked in tried it out and found it wanting in several respects. Therefore, my remarks will be confined solely to sawed oak.

One thing about this kind of oak is that you can turn either side to the wood without anybody raising objections because there is no right or wrong side to it. It differs from the rotary cut walnut and mahogany, which is peeled from a revolving log by means of a stationary knife. This process causes slight ruptures on one side of the veneer, and for this reason it is as well to avoid gluing the wrong side to the corestock. However, as stated before, this rule cannot always be adhered to. But with oak there is no ruptured side, both sides being the same. Fine saw cuts are plainly visible on both sides.

I have nearly always adhered to the practice of turning one piece end for end when jointing two pieces of oak veneer. Sometimes it works out better to turn one piece over. It depends largely, or solely I might say, on the figure of the veneer. One effect I always avoid in matching oak veneer is the V-shaped effect of the figure often seen. I think my meaning will be clear. The flake in oak veneer usually runs diagonally, although in some cases, particularly where the flake is large, it runs straight across the veneer, or nearly so. When two pieces with diagonal figure are jointed by turning one piece over the diagonal flakes meet in a V-shape for the entire length of the joint. I do not like the effect because it makes the joint so conspicuous. If one piece is turned end for end the joint can hardly be distinguished because the flakes simply cross the joint, or appear to, with a little assistance from the finisher, and the effect is that of one large sheet of veneer without a joint.

The Object is to Hide the Joints

My contention, as indicated before, is that the one object of the veneer matcher should be to joint veneer and match it in such a way as to hide the joints. And by that I do not mean just to make a joint that fits closely. A good mechanic can make a joint that can scarcely be detected, but what is the use of a good joint if the arrangement of the jointed pieces fairly shouts that they are jointed! And yet some veneer matchers seem to regard that V-shaped arrangement as the acme of good veneer matching!

We see it occasionally in mahogany as well as oak, although it does not stand out so prominently in the mahogany, the figure not being so clearly defined. I have seen mahogany where the effect obtained by turning one piece end to end was more undesirable than the V-shaped effect obtained by turning one piece wrong side up. Of course, in a case of that kind the artistic sense does not count for anything. It is a case of choosing the lesser of two evils.

There are veneer matchers whose idea of matching seems to be to achieve some freak effect, such as the V-shaped figure referred to above. If writers who talk of the artistic sense necessary to good veneer matching have in mind the avoidance of such freak effects then I am bound to agree with them, but I think good taste describes what is wanted more accurately.

The whole thing puts one in mind of the carpenter or workman who builds his own house and puts a little bandsawed piece here to set it off, and then another "decoration" of some sort another place to set the bandsawed piece off, and so on. They endeavor to paint the lily, failing to grasp the fact that simplicity is the thing to be achieved.

One of the most ingenious woodworking machines is the dovetailing machine. It simplifies cabinetmaking, and does away with the need for highly-skilled craftsmen.

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

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Foreign and Domestic Veneers and Hardwood Lumber

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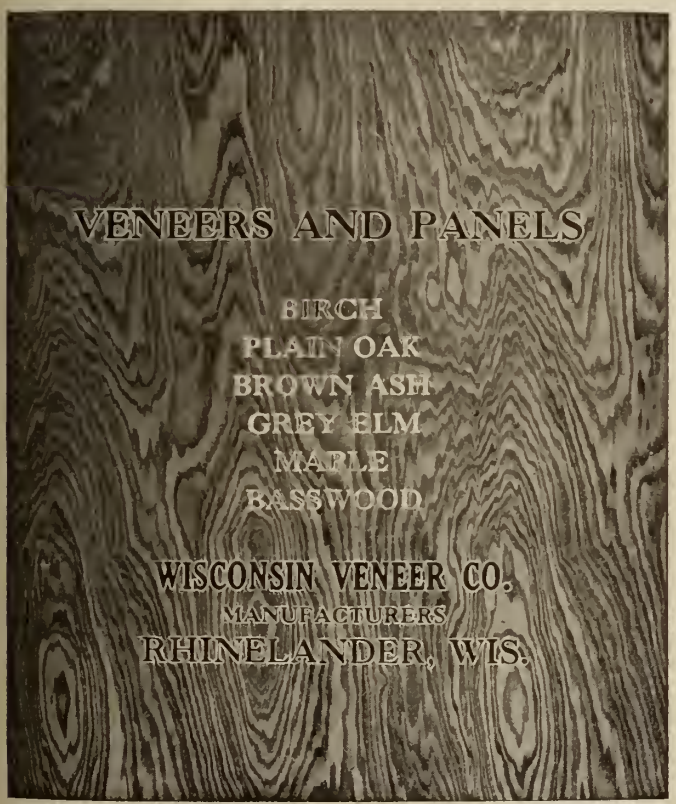

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Also hoops, liners and staves for manufacture of packages

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"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.

(When writing mention Canadian Woodworker)

Laying up Cassava stocks for future planting

The Development and Use of Vegetable Glue

The Story of its Discovery and Introduction Reads Like a Romance—The Finished Product Now so Widely Used, is a Result of Constant and Costly Experiment

Vegetable glue is now so generally known in woodworking industries that it is accepted as a matter of fact, and few persons realize that its development was the result of considerable expenditure of time and money on the part of its discoverer and his associates. Vegetable glue as known in plywood work was discovered by Frank G. Perkins and its discovery has been the means of saving millions of dollars to woodworking industries. Back in 1899 the Planters Manufacturing Company was incorporated in the state of Maine, with its place of business in Florida. Its purpose was the manufacture of starch from cassava, which it was proposed to raise in Florida.

Cassava belongs to the woody shrubs and in several years' growth can attain the height of from twelve to sixteen feet. In cultivation, however, it seldom becomes higher than from six to ten feet. The roots form in clusters at the base of the trunk and are tuberous, resembling gigantic sweet potatoes. It is from the roots of the cassava that tapioca, starch and other products are made.

It is believed that cassava originated in Brazil, whence it spread throughout all tropical and subtropical countries. While it is found to some extent in many countries, it appears to have reached its highest state of cultivation in the Dutch East Indies, and it is in this section that most of the cassava flour is found. Cassava needs a warm, damp climate in order to produce a maximum of starch in the tubers. Its culture is exhaustive to the soil. Fertile fields planted three or four years in succession become unsuitable for further use unless they are heavily refertilized. In any case, the cassava must have deeply dug, loose soil, which allows water to percolate easily. In damp ground the tubers do not develop well.

So the Planters Manufacturing Company established itself at Lake Mary, Fla., and started growing cassava from seed obtained from Jamaica. Succes-

(Continued on page 86)

The commisssary at Lake Mary, Florida

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

SAVE FREIGHT

Rotary Cut Birch and Gum

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"Established 1884"

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All our panels are built with casein waterproof glue. We have increased our Warehouse capacity to carry our customers throughout the year.

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Unequaled for Color and Figure

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NATIVE OR FOREIGN WOODS

27 years' experience in Plywood Production.

HAY AND COMPANY, LIMITED

Woodstock - Ont.

A view of the first vegetable glue factory; also showing the seeds laid up for future planting.

Development and Use of Vegetable Glue

(Continued from page 82)

sive seedings were obtained from these plants by cutting the stalk in lengths about six inches long. In addition to starting the cultivation of cassava the company built a plant and installed machinery for manufacturing starch. It also "grub staked" plantation owners and built a commissary. At first the experiment seemed to be crowned with success, but frosts and droughts turned a pleasant dream into a nightmare of disappointments and after years of effort and an expenditure of about $300,000 the conclusion was reached that the operation should be be abandoned.

In the meantime observant eyes and a keen mind had made a discovery. It was noticed that the juice from the tuber was exceedingly sticky and continually clogging the machinery, so Frank G. Perkins conceived the idea of making a commercial vegetable glue and started along that line. Soon he interested a manufacturer of cheap plywood materials in experimenting on a larger scale. It took much hard work on tests and experiments in that factory before the glue was suitable even for that grade of work, but it was finally worked to a satisfactory conclusion.

Perfected for High Grade Work

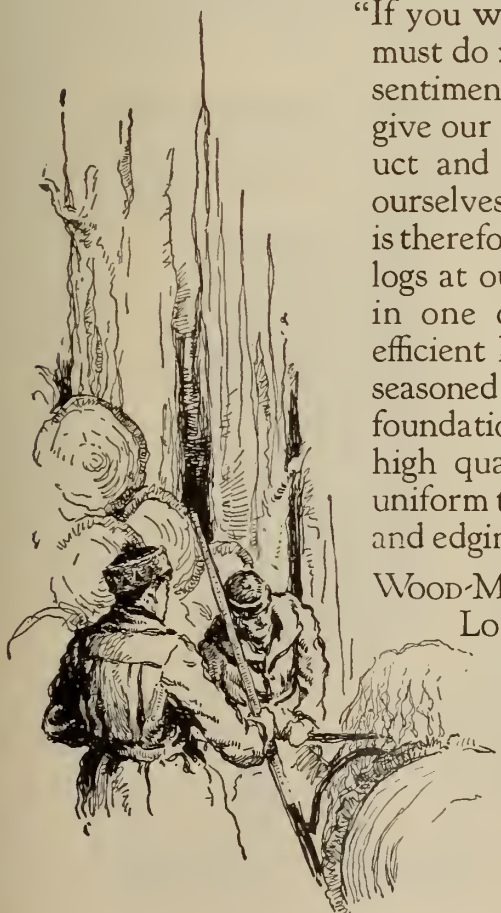
Perkins, however, was far from satisfied. He made up his mind that the glue would do high class plywood work and he succeeded in interesting a large manufacturer of sewing machine cabinets who, seeing the possibilities of a material to replace a more expensive adhesive, gave him every assistance possible to further perfect his glue for high grade work. That he was successful is evidenced by the fact that since 1907 this large sewing machine manufacturer has used this vegetable glue exclusively with satisfactory results. Its manufactured product has been shipped "in the white" as well as finished to all parts of the world and it has withstood sea voyages, humid conditions of the tropics and other hard tests. Naturally this concern was primarily working for its own best interests because of the possible saving in glue costs, as well as manufacturing advantages, but incidentally it did serve the whole woodworking trade.

After the experiments were worked out successfully for the use of vegetable glue on high grade panel work it was patented in the United States and many other countries. The value of this invention to the woodworking trade cannot be estimated. It reduced glue room costs, and for a period during the great

(Continued on page 90)

The discoverer of vegetable glue in a patch of Cassava.

MILES STANDISH SAID



"If you want a thing done well, you must do it yourself." These are our sentiments. ¶ We know that to give our customers the best in product and service, we have to do it ourselves. ¶ Wood-Mosaic Lumber is therefore band-sawn from our own logs at our own mills and kiln-dried in one of the largest and most efficient kilns in the country or air-seasoned in covered piles on concrete foundations. ¶ Result: Invariably high quality of grain and texture, uniform thickness, accurate trimming and edging and—satisfied customers.

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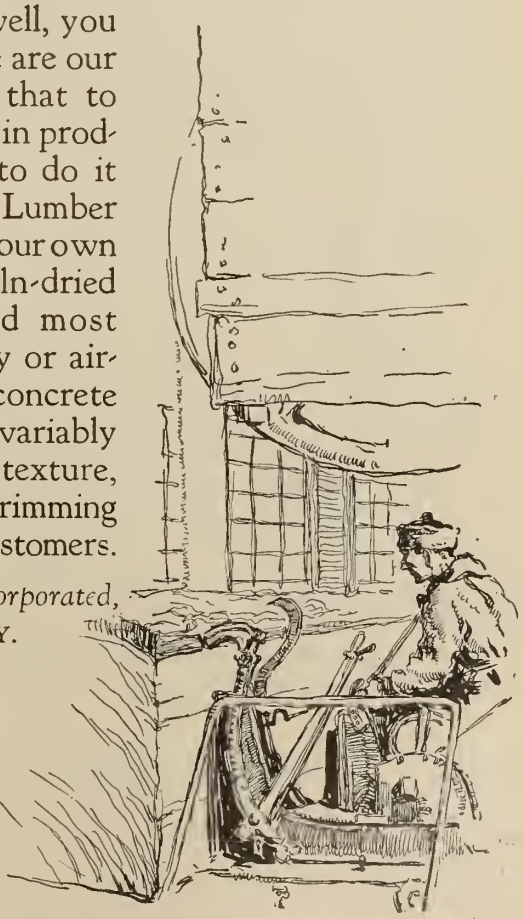


WOOD MOSAIC ***Lumber***

The Lumber Market

Domestic Woods

What is the immediate course of the market? Will prices further advance, or may dealers expect a reaction? These are questions which many wholesalers and retailers are asking. The expressions of opinion differ considerably—and are, no doubt, colored by the temperament of each individual. Many believe that prices will even advance until the new cut comes to the market, and then we may look for a moderate set-back. On the other side, there are those of a more optimistic nature who venture the view that the new cut will have little or no influence on values, provided, of course, there is a fair demand. This type of dealer points out that the market is now almost bare of stock and that the new lumber will, therefore, only take care of ordinary requirements, not taking into account the possibility of a strong call for building and industrial purposes. Some wholesalers have received several substantial orders for the new cut at very good prices.

In Montreal the market generally continues to be active and firm. Wholesalers state that the chief difficulty is to secure desirable stocks, and that the mills have very little on hand; in fact in some lines they cannot get supplies. Reports from St. John show that there is considerable fluctuating in the prices of lumber as a result of the heavy demand and the fact that unprecedented conditions prevailing may keep local saw mills from operating for some weeks.

In Ontario conditions remain about the same. There is a quiet, hopeful tone pervading all ranks and some disposition to look into the future and speculate on what will be the outcome when new dry stocks arrive on the market. Most sawmills are now under way for the season, having got off to a good start during the past few days. A number in Northern Ontario have not yet been able to commence cutting owing to the ice being rather slow to break up. There is an ample supply of men, it is reported at most milling points, and in some cases advances in wages have been granted from 10 to 15 per cent.

Of course, the strength of the lumber market depends upon two factors, building operations and industrial activities. Whether the extensive structural schedule which is being carried out in larger centres both in Canada and the United States will extend beyond the fall months, is problematical. Some authorities declare that energy will have spent itself by that time and the feverish demand, which has been existtent for certain classes of lumber so that a shortage has been created in many widths and thicknesses, will have disappeared.

The next month or two will tell the tale whether the present value in lumber will be maintained.

Imported Woods

According to the "American Lumberman" conditions in the hardwood industry in the United States are as follows:

LOUISVILLE, KY.—Hardwod shipping continues fairly active on old orders and on small orders, but there is not much big business being placed, and most of the new business is in 1- and 2-car lots. A good many of the large buyers have been out of the market for the better part of the last six weeks, but their consumption is heavy, and it is only a question of a short time before they will be forced to re-enter the market for supplies. There appears to be a feeling among buyers that with the summer coming on, production will show a big jump and values will decline, considering the fact that transportation conditions are very fair, and movement is rather prompt. However, it is pointed out that with so many large buyers out of the market at the same time, it is reasonable to believe that they will all come into the market again at about the same time, considering steady consumption. This would result in a steady demand and would result in a slightly stiffer market.

Dry stocks on hand are not heavy, most yard stocks having shown a considerable decline during the spring. Production is beginning to pick up with better weather and less water in the South. Markets are holding firmly, and while there is not so much business being placed, it is claimed that prices are being maintained.

MEMPHIS, TENN.—Export business is hardwood lumber and forest products is exceptionally well maintained, more business having been booked during the first week in May than was booked during the corresponding period in April, despite the fact that business during that month was large. Most of the demand is for oak and gum, but there is increasing call for ash as well as poplar.

Consumers of southern hardwoods have not yet recovered from the abnormally heavy deliveries of lumber and forest products that fairly swamped them as a result of the sudden clearing of the transportation situation during the first part of April, and they are placing orders in only modest volume. The lull in buying which manifested itself several weeks ago is still rather pronounced, and it is also notable that price concessions are being made here and there. Manufacturers of hardwood lumber here, however, are very strongly of the opinion that there will be a renewal of buying in the near future. They point out that all the major consuming groups are working at full capacity and that they are exceptionally well supplied with orders for their output. Attention is called to the abnormal activity in building which insures good business for the furniture industry, to the fact that the automobile factories are working at an unprecedented rate, to the increased demand from the railroads for ties, timbers and car stock, to the expanding demand from agricultural implement manufacturers, and to the well maintained buying from foreign sources. There is no apparent pressure on the part of owners to sell. Offerings of dry stock are not heavy. There is, in fact, quite a scarcity of ash, elm, maple and plain and quarter sawn sap gum in shipping dry material. Red gum appears to be the dullest item on the hardwood list.

Producing conditions over a large part of the Valley territory are far from favorable. Heavy rains have occurred in western Tennessee, eastern Arkansas, western Mississippi and northern Louisiana during the last week and, the ground is so thoroughly watersoaked that comparatively little progress is being made with logging. In southeastern Arkansas, southern Mississippi and northern Louisiana, quite a number of mills are running on short time because of inadequate timber supplies. Even some of the

General view of the C. L. Willey Company's Plant in Chicago, showing frontage on the Chicago River. Our facilities for receiving and shipping, both by rail and water, play an important part in the service we render our customers.

Selected logs are arriving at our plant almost daily, sent in from the markets of the world. Our organization is world wide—our outlet practically unlimited. Willey Venecrs are found wherever fine work is appreciated.

(1838)

C. L. WILLEY COMPANY

The Largest Veneer Plant in the World

GIVING you exactly what you want, when you want it, insures satisfaction to you and ultimate profit to us.

That is why we maintain a stock and equipment so large and an organization so wide in its operations that you will always find here just what you want, in any kind of Veneer or Hardwood Lumber, backed by a service that has ***your*** interests at heart. No other kind of service could have built the largest Veneer Plant in the world—no less in service and supply can keep it going and growing, as it is.

Keep us posted on your needs—immediate or prospective—and we will keep you supplied with samples, of the general character required. You will thus avoid shortages, hurry-up orders, and possible delays.

C. L. Willey Company

2558 South Robey Street
CHICAGO, ILLINOIS

H. ROBERTSON
Sales Representative for Michigan
232 Lyon St., N.W., Grand Rapids, Mich.

EARL VAN
Eastern Sales Representative:
Everett Hotel Jamestown, N.Y.

larger plants are working with only two or three weeks' supply of logs ahead.

EVANSVILLE, IND.—Hardwood business has been holding up well. Inquiries have been rather heavy. While such items as elm and maple have been tending upward for some time, the general opinion is that there will be no sensational advances during the summer. Logs are rather scarce and prices are high. Practically no logs now are coming to the local market from southern States. Logging is gradually being resumed at points along Green and Barren rivers in western Kentucky. Furniture manufacturers have enough orders to keep their plants busy for the rest of the summer. Veneer business continues heavy. Chair and desk manufacturers are busy. Tie manufacturers report a heavy trade with the railroads. Box plants in this section are being operated on steady time.

Development and Use of Vegetable Glue

(Continued from page 86)

war it was generally conceded that if vegetable glue were not in existence it was doubtful if many factories would have been able to continue operation owing to the scarcity of other adhesives.

During the experimental period it was found that on account of the heavy body and great tenacity of vegetable glue it could not be worked successfully on the type of glue converters and spreaders known. So it also became necessary to develop new machinery.

With the building of suitable machinery for its efficient working the use of vegetable glue began to increase. The first few years were "hard sledding," but one by one manufacturers began to adopt it until today there is scarcely any type of plywood construction in which it is not used.—By M. A. Burt in "The Furniture Manufacturer and Artisan."

Basswood for Pails

Dark basswood can be used for pails as well as light. The wood must be quite clear, but small, tight knots are not objectionable. The timber usually comes to the factory in the form of logs. Some firms buy only No. 2 logs, which is the grade below the veneer-log grade, since they can use sizes as small as 6 inches in diameter at the small end. They prefer woods-run logs, however, if these are not too high-priced. The pail covers are generally made from the waste in manufacturing staves. Hollow logs, which are quite characteristic of basswood, can be utilized to good advantage, because the outer sound rim of wood, if not too narrow, can be cut into stave bolts and staves with comparatively little waste. Such logs can usually be worked much more profitably into staves than into lumber. Some hollow logs otherwise sound will yield one-third more than the log scale in pail staves, when for lumber there would be little if any overrun and only narrow widths could be obtained.

Logs are generally purchased in 8 to 10 foot lengths, but much material is also purchased in lengths of about 3 feet, especially small-diameter timber, which is bought of farmers. Hollow logs are accepted, but they should have at least a 6-inch rim of sound wood. Hollow logs are sometimes taken down to a 4-inch shell, but such material often can not be handled at a profit because of the expense of the labor to work it up. Small logs are profitable because there is a large overrun of such logs compared with the yield in lumber. Although factories prefer the timber not smaller than 6 inches in diameter, 5-inch and even some 4-inch sizes are taken if of good quality. Some manufacturers prefer to purchase by the cord of 128 cubic feet and in 39 and 52-inch lengths. On account of the difficulty of getting it cut up, much smaller material is now shipped in 12-foot lengths. Second-growth timber is considered best quality.

Refrigerators and Kitchen Cabinets

The class of products included under refrigerators and kitchen cabinets might be termed kitchen furniture, since it includes refrigerators, kitchen cabinets, kitchen tables, and, in fact, all kinds of furniture made for kitchen and pantry use, except kitchen chairs. Basswood is well liked for these articles, because it has a clean appearance in the unfinished state and is odorless. It can also be painted or varnished advantageously, if desired. It is much used for the lining, shelves, drawers, and compartments of kitchen cabinets and for the tops of kitchen tables. Such parts are usually kept clean by scrubbing with soap and water, and basswood keeps its shape when treated in this way. The No. 1 common grade or log run is generally used for the manufacture of such articles from which clear stock is cut for exterior parts, and lower-grade stock is utilized for the interior woodwork.

News of the Trade

Fire recently destroyed the planing mill of Galt and Trick, 98 Athol St., Oshawa, Ont. The loss to equipment and material is estimated at $5,000. The owners expect to rebuild shortly.

James A. Cornfoot, of Ingersoll, Ont., who has been in cheese box manufacturing business for the past 40 years, has recently started a factory for the manufacture of cheese boxes in that town. The factory which is fully equipped for this business is capable of turning out cheese boxes in very large quantities.

The Holland Varnish Co., Limited, Montreal, are making additions to their offices which will cost about $10,000.

The new planing mill of W. J. McKee, located at 133 Salter Ave., Windsor, Ont., was opened recently. The new mill is a commodious building, one storey high of solid brick construction, the dimensions being 100 x 75 ft.

General Motors Truck Company, of Canada, Limited, Oshawa, Ont., is a new company recently formed to manufacture and deal in motor trucks, carriages, wagons, boats and other similar products. Capital $10,000.

Fire completely destroyed the mill of the Haugh Lumber Co., Windsor, Ont., recently, causing $30,000 damages. The loss is partly covered by insurance.

The Senneterre Lumber Co., Quebec, P. Q., is a new organization recently formed to manufacture and deal in wood products of all kinds. Capital $20,000.

Fire totally destroyed the planing mill of A. H. Slight at Stayner, Ont., recently. The loss is estimated at $13,000 and is partly coverd by insurance.

Muskoka Wood Mfg. Co., Limited, Huntsville, Ont., are about to begin the erection of a new boiler house. The

Gum

Oak, Ash and other Southern Hardwoods

You will agree That—

Lumber—
Kraetzer-Cured

means—

1. Freedom from warp.
2. Maximum quality.
3. Lower moisture content.
4. Less kiln drying Cost.
5. Uniformity.
6. Accurate grading.
7. Bright, unstained lumber.
8. Saving in working costs.
9. Dependability.

Isn't this the kind of lumber you're looking for?

Member of

HARDWOOD MANUFACTURERS INSTITUTE · SCIENTIFIC UTILIZATION · TRADE MARK

Quantity, as well as quality and economical production, depend upon the **uniformity** of the raw materials employed.

Experienced production managers know that the low initial cost of unreliable materials means the highest ultimate cost of the finished product.

The **uniformity** and **dependability** of KRAETZER-CURED lumber has developed the unswerving patronage of those manufacturers who are **exceedingly particular,** who take pride in the quality of their own products, and **who know their costs.**

The Kraetzer-Cured Lumber Co.
Greenwood, Miss.

ON EVERY BOARD THE KRAETZER-CURED LUMBER CO. YOUR GUARANTEE OUR MUTUAL PROTECTION

Look for the Brand on Every Board

building will be one storey, 40 x 40 ft., and will cost about $5,000.

Goderich Mfg. Co., Goderich, Ont., makers of woodenware and furniture, are contemplating moving their place of busniess from Goderich to Stratford next fall, where it is rumored they may build a new sawmill.

Pioneer Builders, Limited, Fort Frances, Ont., is a new firm recently formed to manufacture and deal in builders' supplies and boxes. Capital $40,000.

Emergency Auto Seat and Body, Limited, Toronto, is a new organization recently formed to manufacture and deal in all kinds of automobile bodies Capital $500,000

Many people in the furniture manufacturing trade in Ontario will learn with regret of the death of J. H. Noble, 99 Jameson Ave., Toronto. Since 1910 Mr. Jameson had represented the Glidden Varnish Co., calling on the trade in Western Ontario. For many years he engaged in the manufacture of pianos and was at one time in business in Aurora, Ont. He was in his 59th year.

Musical Merchandise Co., Limited, Toronto, were recently granted a federal charter to manufacture and deal in all kinds of musical instruments. Capital $150,000.

Mixol, Incorporated, Montreal, was recently incorporated to manufacture and sell paints, oils, varnishes, lacquers and other similar products.

Vachon & Parent, Limited, Disraeli, P. Q., is a new firm recently formed to manufacture sash, doors, wooden toys and other wood products. Capital $40,000.

Rand Company, (Canada) Limited, Niagara Falls, Ont., was recently granted a provincial charter to manufacture and deal in office furniture, filing cabinets, and other similar products. Capital $40,000. J. H. Rand, manufacturer of Buffalo, N. Y. and B. G. Rand, manufacturer of North Tonawanda, N. Y. are two of the incorporators

The Saftee Glass Co. of Canada, Limited, Ottawa, were recently granted a federal charter to manufacture and deal in laminated, non-shatterable and bullet proof glass. Capital $500,000.

The Canadian Western Lumber Co., Fraser Mills, B. C. are contemplating building an addition to their veneer plant at a cost of $5,000.

The Tait Plate Glass Co., Victoria, St., Kitchener, Ont., have started the erection of an $8,000 addition to their factory.

J. Kreiner & Co., Wilhelm St., Kitchener, Ont., furniture makers, are contemplating adding a one storey frame addition 26 x 28 ft to their plant at an estimated cost of $2,000.

Walnut Furniture Mfg. Co., Ltd., was a recent registration at Montreal.

John C. Corcoran Machinery Co., Limited, Montreal, was recently organized to manufacture all kinds of woodworking tools and machinery.

A. G. Bowler, for some time past chief hardwood inspector in Montreal district for the National Hardwood Lumber Association has resigned and gone to Boston. He has been succeeded by H. E. Hubbard, who for the last two years has been in charge of the Toronto district.

The Comrie-Grierson Lumber Co. have opened a new mill and yard at Scarboro Junction, Ont., near Toronto, and will deal in lumber, interior trim and other building supplies.

B. & N. Planing Mills, Milverton, Ont., recently secured a $27,000 general contract for an addition to the Continuation School in that town.

The Starr Phonograph Co., London, Ont., recently purchased the old Advertiser Building and will remodel and make additions to it for a phonograph factory and show rooms.

The Tavistock Building and Mfg. Co., Limited, Tavistock, Ont., is a new concern recently incorporated to manufacture all kinds of wood products including, sash, doors, boxes, toys and other similar commodities. Capital $30,000. Two of the incorporators are H. W. Kalbfleisch and H. Hitzrath, both of Tavistock.

Hall Bros. of Shelbourne, Ont., planing mill operations, who made an extensive addition to their plant last fall have been very busy lately installing several new pieces of equipment to handle their growing business. Among the new machines is a four side moulder installed by the Preston Woodworking Machinery Co., of Preston.

The spindle factory of Bergeron Bros., St. Charles de Mandeville, P. Q., was destroyed by fire recently causing a loss of $20,000.

Snappy Manufacturing Co. of Canada, Limited, Galt, Ont., was recently incorporated to manufacture all kinds of wood novelties. Capital $50,000

The Public School Board of Niagara Falls, Ont., have awarded a contract for a new school addition. W. S. Byers, 131 Victoria St., is the secretary and will be in the market for desks and blackboards.

The Canadian Graphaphone and Piano Co, Limited, was recently registered at Montreal.

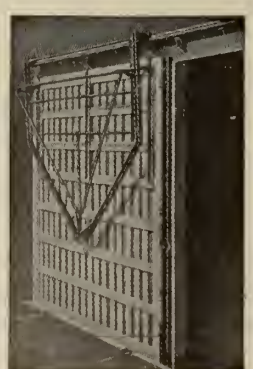
The Moncrief Box Co., Limited, at Winnipeg, recently suffered a small fire loss.

A. Roger, who conducted a sash and door factory at Montreal, has assigned to A O. Chalifour.

The Independent Coal Co., of Ottawa, recently purchased the Buckingham Planing Mill Co., at Buckingham, Que. The charter of The Buckingham Planing Mill Co. dates from about the year 1866, the mill and offices of the company at that time and for many years subsequently being at Masson, Que.

The business seems to have been conducted so economically at Masson that rumor credits the company with paying regular dividends from an accumulated surplus for some time after regular operations were suspended. Some twelve years ago The Parker Planing Mill Co., of Buckingham, then in operation about eight or nine years, took over at an upset price the stock and affects of The Buckingham Planing Mills Co., and the companies were amalgamated, business from the time of the taking over of the Masson Company being conducted under the name and charter of The Buckingham Planing Mill Company, Limited. Four or five years ago the Buckingham Planing Mill Company added a sawmill to the plant, which is included in the sale to The Independent Coal Co.

The Door Carrier System



Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

DRY KILN DOOR CARRIER CO.

1117 Cornell Ave.
INDIANAPOLIS, IND.

The Sidman Lumber Curing Process

IN

Either Wood, Brick or **Concrete** Building.

Fillers and glazes to preserve the building.

The TAG-ROESCH **Automatic** Time-Temperature and **Humidity Controller.**

Three-ply and Du-o-fold Army Duck Curtains, and Hussey Door Carrier Doors.

Automatic Heating, Ventilating and Humidity Systems for Varnish Rooms.

Reducing and Back Pressure Valves, Oil and Grease Extractors.

Sidmans AUTOMATIC **Suction System** for returning ALL Condensation DIRECT to the Boiler.

Cantilever Steam Traps and other Steam Specialties.

Active and Non-Down Draught Vent Heads for all purposes.

Cleanable Screen Panel and Window Ventilators.

Roller Bearing (Ott) **Channel Iron** Car Bunks and Transfer Cars.

Thermostats, Recording Gauges, and The Sidman Special Hygrometers.

For Description and prices, write

The

Sidmans of Canada

Heating and Ventilating Engineers and Lumber Curing Specialists

LONDON THE S.H. L.C.K. Reg Trade Mark **ONTARIO**

"Well Bought is Half Sold"

SPECIALS

For Quick Sale

2	cars	4/4"	**No. 1 C. & B. Soft Elm.**
3	"	8/4"	**No. 2 C. & B. " ") 15% No. 2 Com.)**
2	"	4/4"	**No. 3 Com. Elm.**
2	"	4/4"	**No. 2 Com. Basswood.**
1	"	4/4"	**No. 2 Com. Birch.**
1	"	5/4"	**No. 2 Com. Birch.**
2	"	8/4"	**No. 2 Com. Birch.**
2	"	4/4"	**No. 2 C. & B. Soft Maple.**
2	"	5/8"	**x 3" Spruce Crating.**
2	"	5/8"	**x 3" & up Spruce Crating) largely 3 & 4")**

Canadian General Lumber

Company Limited

FOREST PRODUCTS

TORONTO OFFICE:—712-20 Bank of Hamilton Building

Montreal Office:—514 Canada Cement Company Building

Mills: Byng Inlet, Ont.

General Woodworking Trade Mart

Quick Action Section

Equipment Materials Employment

For Sale

One Yates 36" Gang Edger, used machine, in good working order, with full set of collars, sleeves and 22 saws, for ripping hardwood flooring strips. Box 157, Canadian Woodworker, Toronto. 5

Wanted

Foreman for well equipped planing mill, able to set up machines and look after bench work, state wages expected to Box 152, Canadian Woodworker, Toronto. 4-5

Traveller Wanted

Salesman calling on Woodworking plants to handle wood cement on commission.

Canadian Wood Cement Co., Inc.,
279 Visitation Street
Montreal.
5

Machine for Sale

"Baxter D. Whitney" 30" Scraper, complete with Grinder, extra set of knives and regular equipment, $850.00. Machine as good as new. Box 155, Canadian Woodworker, Toronto. 4-5

GOOD VALUES of Rebuilt Machines in Stock

Band resaw, Connell & Dengler, 54 and 60 inch.
Band rip saw, Yates No. 281.
Circular Sawmill, Hoosier Pony.
Circular resaw, 30 in. and 44 in.
Dowel Machine, Clement.
Dowel Glüer and driver, E. B. Hayes.
Jointer, Falls Machine Co., undercut 24".
Jointers 12", 16", 24".
Lathe, back knife, Clement 40".
Matcher, Woods No. 403 double profiler.
Matcher, Woods 15" x 6" No. 24.
Matcher, American No. 229 hardwood.
Matcher, Berlin No. 94, 15" x 6".
Moulder, Woods 10 and 12" inside.
Moulder, American 7" and 10" 4 side.
Planers, all sizes, single and double.
Sander, endless bed 48" H. B. Smith.
Sander, Moore Machine Co. Belt.
Sanders, Berlin 36" 42", 48" and 60".
Sander, Clement belt roller table.

Woodworking Machinery Co., of Buffalo,
54 Mechanic St.,
Buffalo, N.Y.
4 T.f.

Used Machinery For Sale

Having installed larger machines, we are offering a 74" Veneer Lathe, can be seen daliy in operation, 37" Model "E" Francis Glue Spreader for waterproof glue, 6, 38", 4 Screw Iron Veneer Presses. Hay & Company, Limited, Woodstock, Ontario. 4-6

Executors Sale by Tender

Sealed tenders will be received by the undersigned up to May 24, 1923., for the valuable site and woodworking plant of the Benjamin Wheel Company, Limited, Yarker, Ontario, including water rights on the Napanee River.

Location is on the main line Toronto-Ottawa Canadian National Railways, fourteen miles from Napanee and twenty miles from Kingston.

Parcel 1	Woodworking shop 60' x 72'—2 storeys equipped with necessary line shafts, pulleys, belting, blower system, saws, surfacer, jointers, electric lighting system, air spray painting machine, nailing machine, engine lath, drill press, etc.
Parcel 2	Storage and Shipping 45' x 70'—2 storeys.
3, 4, 5	Kilns and boiler house 90' x 30'.
6	Power House 32' x 51' equipped with electric lighting plant.
7	Power House 32' x 40'.
8	8A Warehouses on railway siding 36' x 72' and 36' x 65'.
9	Storage 33' x 60'—2 storeys.
10	Office and living apartment 30' x 48'—2 storeys.

Information may be had at the office of the Benjamin Wheel Company Limited, Yarker, Ontario.

The factory is in operation at the present time.

The highest or any tender need not necessarily be accepted.

C. A. BENJAMIN,
5 Executor.

Steel-Clad Wood

The material known as three-ply wood, or plywood, has now come into very extensive use for many purposes where thin and strong partitions are required. It is made by fixing together three thin layers of wood in a manner which affords a great strength and freedom from warping. The latest development of this ingenious invention has been produced by a British firm. It consists of chemically cementing to the ordinary multiple wood, on one or both of its faces, a sheet of steel coated either with lead or zinc. This arrangement gives the wood a protective and fireproof surface and it also opens up the possiblity of many interesting applications. Weight for weight the new material is claimed to be at least eighty times as stiff as mild steel. The purposes for which it is at present intended are for shelves, doors, etc., in houses and shops, for body work, dash boards, roofs, and so on in vehicles for the sides and seats of railway cars and tramcars, and for wheel discs, pulleys, lifting cages, and so on in general engineering. The material is made in standard sheets and it can be readily cut by means of a circular or band saw. Wire nails may be driven through it, and if fixing by screw nail is required, holes can be formed by one operation by means of a punch.

Geysers Harnessed

The largest group of geysers in California, in Sonoma county, is being harnessed to the steam engine to provide power, writes H. H. Dunn in May issue of "Popular Mechanics." At the middle of February, one geyser had been tapped and connected with a steam engine, where it yielded 150 horsepower, which was put to work immediately drilling the "well" with which another geyser is to be tapped and likewise connected with another engine. The ultimate object of the project is to provide steam enough from the whole group of geysers to drive turbines in a power house, thereby supplying electric current, at a cost below even that at which hydro-electric power can be produced, to a dozen large towns and cities.

Only about one-half of the steam available from the first geyser has been taken, owing to errors in drilling the first well and to lack of experience in keeping the steam confined and hot between the geyser and the engine. Plans under which the work is now being done provide for the taking of approximately 90 per cent. of the steam from each geyser tapped in the future.

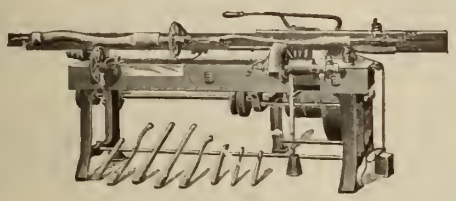
Though volcanic heat has been harnessed in Italy, this is the first time that power has been taken from the subterranean fires of the New World.

The method of taking the steam from the geysers is comparatively simple. A will is driven at an angle, from a point some hundred or more feet from the mouth of the geyser, to strike the throat of the geyser at a depth of 200 to 400 feet, this depth depending on the solidity of the earth and rock formation surrounding the geyser.

Closely following the drill goes the two-inch pipe, and when this tube breaks through the side of the throat of the geyser the steam under considerable pressure, follows it as an outlet, rather than the rougher and usually twisted natural vent. The upper end of the two-inch pipe is then capped, and exhaust and a safety valve put on and the steam conveyed in a smaller pipe to the engine.

Klotz Machine Co's
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

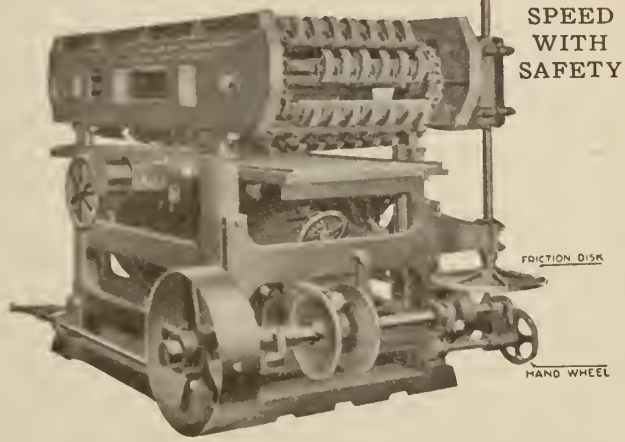
MANUFACTURED BY

Klotz Machine Co.,
Sandusky, O., U. S. A.

Write for descriptive circulars and prices.

THE SMITH
Self feed
Jointer Attachment

SPEED WITH SAFETY



Here is a self feed jointer attachment that is saving its users an average of $1200.00 per year.

We will make this attachment to fit any standard jointer or will furnish jointer and attachment complete.

SMITH MACHINERY CO.
SAGINAW - MICH.

If It's a Chair Machine It's a McKnight

We have recently purchased patents and patent rights for the saddle seat scooping machine from the Sheboygan Machine Company of Sheboygan, Wisconsin.

Combined with patents of our own, we now control the overhead knife and cam action used in cutting saddle seats. This puts us in a position to furnish either a SHEBOYGAN or McKNIGHT machine or parts of either.

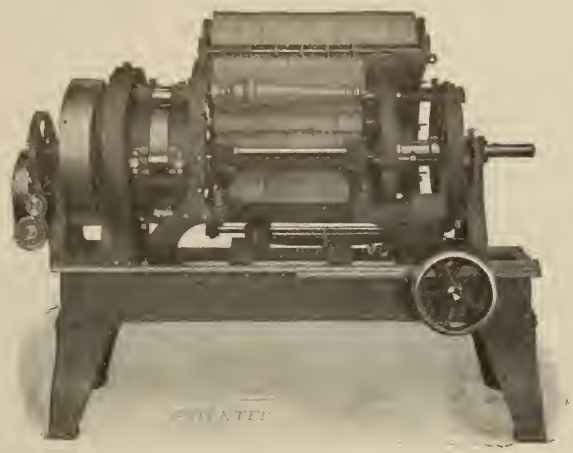
L. G. McKnight & Son Co.
Manufacturers of Patented

Chair Making—Chair Bending, Wood Working Machinery

Catalog and Cuts upon Request

GARDNER, MASS., U.S.A.

How Many More



orders could you fill if you had a Nash Automatic Sander for your chair and furniture turnings?

Let me give you details as to capacity, etc., of the Sander and you can then figure the saving for yourself.

J. M. NASH, Milwaukee, Wis.

The "Canadian Woodworker" Buyers' Directory

The following regulations apply to all advertisers:—Full page, every issue, thirty-two headings; half page, sixteen headings; quarter page, eight headings; eighth page, four headings.

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Smart-Turner Machine Co., Hamilton, Ont.

AICOHOL
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Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Co., Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
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Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
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Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
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Simonds Canada Saw Co., Montreal, Que.
Yates Machine Co., P. B. Hamilton, Ont.

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Yates Machine Co., P. B. Hamilton, Ont.

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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

BEAVER BOARD
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BENCH PLANER
Oliver Machinery Co., Grand Rapids, Mich.

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Fay & Egan Co., J. A. Cincinnati, Ohio.
McKnight & Sons Co., L. G., Gardner, Mass.

BEVEL & MITRE SAWS
Pettingell Machine Co. Amesbury, Mass.

BIRCH
Anderson, Shreiner & Mawson, Ltd., Toronto
Edward Clark & Sons, Toronto, Ont.
Thurn-Maxsom Lumber Co., South Bend, Ind.

BOILER FEED PUMPS
Smart-Turner Machine Co., Hamilton, Ont.

BLOWERS
Canadian Blower & Forge Co. Kitchener, Ont.
Sturtevant B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

BLOW PIPING
Canadian Blower & Forge Co. Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

BORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
McKnight & Sons Co., L. G., Gardner, Mass.
Nash, J. M. Milwaukee, Wis.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

BOX BANDS
Laidlaw Bale-Tie Co., Hamilton, Ont.

BOX MAKERS' MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

BOX SPRINGS
Fischman Spring Co., Kitchener, Ont.

CABINET PLANERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CARVINGS
Klise Mfg. Co., Grand Rapids, Mich.
Decorators Supply Co., Chicago.
Walter, John & Sons Limited, Kitchener, Ont.

CARVING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

CARVING MACHINE BITS
Independent Tool Works, St Paul, Minn.

CARVED WOOD MOULDINGS
Klise Mfg. Co., Grand Rapids, Mich.

CASTERS
National Hardware Co., Orillia, Ont.

CENTRIFUGAL PUMPS
Canadian Blower & Forge Co., Kitchener, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

CHAIR PADS
Fischman Spring Co., Kitchener, Ont.

CHAIR MACHINERY
McKnight & Sons Co., L. G., Gardner, Mass.

CIRCULAR SAWS
Atkins & Co., E. C. Indianapolis, Ind.
Shurly-Dietrich, Galt, Ont.

CLAMPS
Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Black Bros. Co., Mendola, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Sons Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company,
Superior Hand Saw and Clamp Co., Grand Rapids, Mich.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

CLAMP CARRIERS
Black Bros. Co., Mendota, Ill.
Taylor Mfg. Co., Poughkeepsie, N.Y.

COATED ABRASIVES
Herman Behr & Co., Inc., Brooklyn, N.Y.

COTTON WASTE
Carter, E. T., Toronto, Ont.

COTTONWOOD PANELS
Rathbone, Geo. Ltd., Toronto, Ont.

CROSS-CUT, MITRE AND RIP SAWING MACHINE
Mackenzie Machinery Co., D. Guelph, Ont.

CUT OFF SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Co., of Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Shimer Cutter Head Co., Galt, Ont..
Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.
Oliver Machinery Co., Grand Rapids, Mich.

DOORS
Pannill Door Co. Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

DOORS (Flush Veneered)
Pannill Door Co. Ltd., Toronto, Ont.
Hay & Co. Ltd., Woodstock, Ont.

DOORS (Fir)
Rathbone, Geo. Ltd., Toronto, Ont.

DOOR CARRIERS FOR DRY KILNS
Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Wylie & Co., Matthew Glasgow, Scotland

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company,
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Co., Preston, Ont.

DOWELS
Canada Wood Specialty Co. Ltd., Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont.
Cutler Desk Co., Buffalo, N. Y.
Grand Rapids Veneer Works, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sidmans, London, Ont.
Standard Dry Kiln Co., Indianapolis, Ind.
Sturtevant, B. F. & Co., Galt, Ont.

DUST COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.

EDGERS (Single Saw)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

EDGER SAWS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

ELECTRIC MOTORS
Sturtevant, B. F. & Co., Galt, Ont.

ELECTRICAL EQUIPMENT
Northern Electric Co., Montreal, Que.

ENAMELS
Cosmos Chemical Co., Port Hope, Ont.

END MATCHING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

EXHAUST HEADS
Sturtevant, B. F. & Co., Galt, Ont.

EXHAUST SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

FEED ROLLS
Atkins & Co., E. C. Hamilton, Ont.

FIBRE PRODUCTS
Carter, E. T. Toronto, Ont.
National Patent Reed Sales Co., Philadelphia, Pa.
Walter, John & Sons Limited, Kitchener, Ont

FIR DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

FIRE ALARM SYSTEMS
Northern Electric Co., Montreal, Que.

FLOORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FRUIT PACKAGE MACHINERY
St. Joseph Iron Works, St. Joseph, Mich.

"Here's a real Table Slide!"

THE "Watertown Slide" and the Automatic Roller Bearing Equalizer Table Slides solve the problem. No more jerking, tugging or bending to extend the table—just a quick, easy operation. Think what an effect this has on customers when the salesman is demonstrating. Is it any wonder that many merchants insist on having all their tables equipped with the "Watertown Slides?"

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Watertown Table-Slide Company
WATERTOWN, WISCONSIN :-: U.S.A.

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"Gibraltar RedSpecial"—The High-Grade Belt for Transmission Service.

"Gibraltar" Conveyor and Elevator Belts—the Belts with the protective covering of Cord Tire Tread Stock that effectively resists abrasive action.

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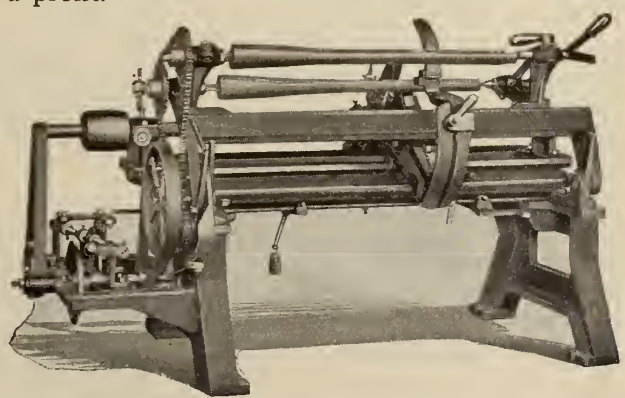
will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

MAKE MORE MONEY

from your timber by working it into handles and other turned work. Short and crooked logs, small trees, and other waste material can be worked at a profit.



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We build Turning Lathes, Sanders, Rip Saws, Bolters, Boring and Chucking machines, etc.

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The Ober Mfg. Co.

Chagrin Falls, O., U.S.A.

"Canadian Woodworker" Buyers' Directory—Continued

FIRE INSURANCE
Canadian Appraisal Co. Ltd., Montreal, Que.
Dominion Appraisal Co., Toronto, Ont.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N. Y.
Herman Behr & Co., Inc., Brooklyn, N.Y.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).
Canada Glue Co., Brantford, Ont.

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GLUE
Canada Glue Co., Brantford, Ont.
Cannon Canadian Co., Toronto, Ont.
Coignet Chemical Products Co., New York, N.Y.
Kane Manufacturing Co., Chicago, Ill.
Monite Waterproof Glue Co., Minneapolis, Minn.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

GLUE HEATERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.

GLUE JOINTERS
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUED STOCK
Nichols Company, A. S. New York, N.Y.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Simonds Canada Saw Co., Montreal, P.Q.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GROOVERS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Mattison Machine Works, Rochford, Ill.

GUM LUMBER
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Hyde Lumber Company, South Bend, Ind.
Mercereau-Hawkins Tie Co., Huntington, W. Va.
Sondheimer Co., E., Sondheimer, La.

HAND SCREWS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Superior Hand Saw and Clamp Co., Grand Rapids, Mich.

HANGARS
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont

HANDLE & SPOKE MACHINERY
Fay & Egan Co., J. A. Cincinnati, Ohio.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Nash, J. M., Milwaukee, Wis.

HARDWARE
Laidlaw Bale-Tie Co., Hamilton, Ont.
National Hardware Co., Orillia, Ont.
Larsen & Shaw Ltd., Walkerton, Ont.

HARDWOOD LUMBER
Anderson, Shreiner & Mawson, Toronto, Ont.
Atlantic Lumber Company, Toronto, Ont.
Banning, Leland G., Cincinnati, Ohio.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Canadian General Lumber Co., Toronto, Ont.
Dudley Lumber Co. Inc., Memphis, Tenn.
Hall Bros. Ltd., Toronto, Ont.
Hyde Lumber Co., South Bend, Ind.
Johnston Lumber Co., Toronto, Ont.
Kneeland-Bigelow Co., Bay City, Mich.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Louisville Point Lumber Co., Louisville, Ky.
Luehrman Hardwood Lbr. Co., St. Louis, Mo.
Mercereau-Hawkins Tie Co., Huntington, W. Va
Mississippi Hardwood Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Otis Mfg. Co., New Orleans, La.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Pickrel Walnut Co., St. Louis, Mo.
Ritter Lumber Co., W. M. Columbus, Ohio.
Sondheimer Co., E., Sondheimer, La.
Stack Lumber Co., Escanaba, Mich.
Stark & Co., Jas. E., Memphis, Tenn.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Stimson & Co., J. V., Owensboro, Ky.
Sullivan, Frank T. Buffalo, N. Y.
Terry-Nicholson-Cates Ltd., Toronto, Ont.
Thurn-Maxsom Lumber Co., South Bend, Ind.
Wood Mosaic Co., Louisville, Ky.
Willey Co., C. L. Chicago, Ill.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HARDWOOD LUMBER (Kiln Dried)
Rathbone, Geo. Ltd., Toronto, Ont.

HEATING SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

JOINTERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shimer Cutter Head Co., of Can. Ltd., Galt.
Simonds Canada Saw Co., Montreal, P.Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNOBS
Waddell Mfg. Co., Grand Rapids, Mich.

LACQUERS
Cosmos Chemical Co., Port Hope, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.

LEGS
Klise Manufacturing Co., Grand Rapids, Mich.

LUMBER DRY KILNS
Sturtevant, B. F. & Co., Galt, Ont.
Nichols Company, A. S. New York, N.Y.

MACHINE KNIVES
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Peter Hay Knife Company, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

MILL PIPING
Toronto Blower Co., Toronto, Ont.

MITRE SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
McKenzie Machinery Co. D. Guelph, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS
Sturtevant, B. F. & Co., Galt, Ont.

MOTORS
Sturtevant, B. F. & Co., Galt, Ont.

MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS
Laidlaw Bale-Tie Co., Hamilton, Ont.

NAILING MACHINES
Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

OAK FLOORING
Rathbone, Geo. Ltd., Toronto, Ont.

OIL STONE GRINDERS
Oliver Machinery Co., Grand Rapids, Mich.

PAINT
Marietta Paint & Color Co., Marietta, Ohio.

PAINT DRYERS
Nichols Company, A. S. New York, N.Y.

PANELS
Calhoun Plywood Co., Sheboyan, Wis.
Hardwood Products Co., Neenah, Wis.
Hay & Co., Woodstock, Ont.
Pannill Door Co. Ltd., Toronto, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PATTERNS PINE
Rathbone, Geo. Ltd., Toronto, Ont.

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CARBORUNDUM BRAND GARNET PRODUCTS IN THE WOODWORKING CENTERS OF AMERICA

HIGH POINT, N. C.

HIGH POINT, NORTH CAROLINA is one of the biggest little towns on the map. With a population of but 22,270 it is not only considered a wonder industrial town of the South but it is classed as one of the great furniture and woodworking centers of America.

Some idea of the industrial force and the progressive spirit of High Point can be learned from the fact that it has an annual manufacturing output valued at $24,000,000; a million-dollar furniture exhibit building, a seven-hundred-thousand-dollar hotel, nearly six thousand industrial workers, and above all, it's a community that believes in itself.

There are sixty-five woodworking plants in High Point making about everything from fine furniture to caskets and from veneers to wood knobs, representing an annual output of $14,000,000. In a goodly percentage of these plants the sanders are using Carborundum Brand Garnet Products. Years of experience have taught them the value of having garnet paper and cloth that are uniformly coated with North River Garnet on the highest quality of backing with the best possible grade of glue—garnet products that do better work and more of it—that help keep up High Point standards and production.

Carborundum Brand Garnet Products Make Good Sanders Better Sanders

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"Canadian Woodworker" Buyers' Directory—Continued

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Toronto Blower Co., Toronto, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corporation, New London, Wis.
Calhoun Plywood Co., Sheboygan, Wis.
Guelph Patent Cask Co., Scotstown, P. Q.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

POWER APPARATUS
Northern Electric Co., Montreal, Que.

POWER & LIGHT PLANTS
Fischman Spring Co., Kitchener, Ont.

POWER TRANSMISSION MACHINERY
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

PULLEYS
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PUMPS—Condensation and Return
Canadian Blower & Forge Co., Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

RATTANS
Carter, E. T., Toronto, Ont.

REEDS
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

REVERSIBLE PLANING MILL FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FOLLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
McKenzie Machinery Co., D., Guelph, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

SANDPAPER
Behr & Co.. Herman, Brooklyn, N. Y.
Canada Glue Co., Brantford, Ont.
Carborundum Co., Niagara Falls, N.Y.

SASH DIMENSION
Pannill Door Co., Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW SHARPENERS
Oliver Machinery Co., Grand Rapids, Mich.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKenzie Machinery Co., D., Guelph, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

SHAFTING
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co.. Toronto. Ont.

SOFTWOODS
Canadian General Lumber Co., Toronto, Ont.
Rathbone, Geo., Limited, Toronto, Ont.
Hall Bros. Ltd., Toronto, Ont.
Reese Sheriff Lumber Co., Williamsport, Pa.
Luehrman Hardwood Lumber Co. Chas. F., St. Louis, Mo.
Terry-Nicholson-Cates Ltd., Toronto, Ont.

SPRING MATTRESSES
Fischman Spring Co., Kitchener, Ont.

SPRING CONSTRUCTION
Fischman Spring Co., Kitchener, Ont.

SPRUCE DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM & OIL SEPARATORS AND REFINERS
Smart-Turner Machine Co., Hamilton, Ont.

STEEL PLATE PLANING MILL EXHAUST
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

STEEL PRESSURE BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES
Walter & Company, B., Wabash, Ind.
Watertown Table Slide Co., Watertown, Wis.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Calhoun Plywood Co., Sheboygan, Wis.
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

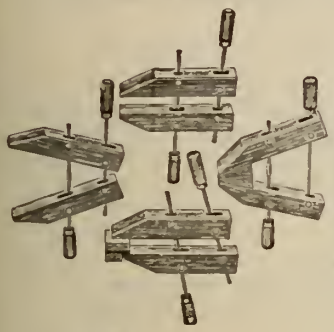
TRUCKS
National Dry Kiln Co., Indianapolis, Ind.
Oliver Machinery Co., Grand Rapids, Mich.

TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

The "JORGENSEN"
Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws



The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."

"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

Manufactured only by the

Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

For Sale By

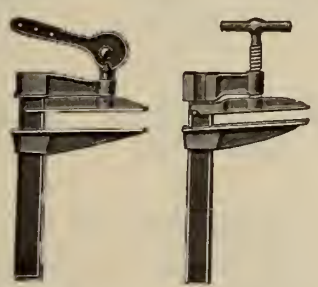
Aikenhead Hardware Limited .....Toronto
Lewis Bros., Limited .....Montreal

97%

of Furniture and allied lines are sold on the recommendation of the Retail Merchant

In the eyes of the Consumer he is responsible

Colt's Clamps
for the
Woodworker



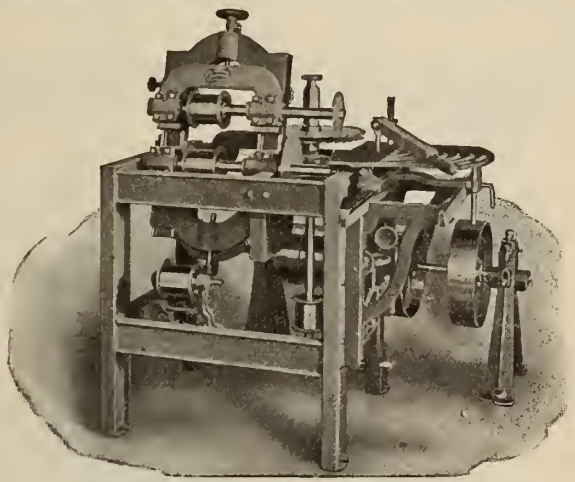
Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.



No. 19 Saw Tenoner
No. 20 Large Saw Tenoner

Fitted with five saws, has replaced cutter head machines; for all jointing and halving in wood shops and for automobile and carriage wood-work it is the best machine on the market.

Much door, window, sash, furniture and cabinet work is done with this machine where a nice, smooth tenon is required. It is also used for the halving and jointing of stock at any angle.

Tenoners equipped with flexible coupling for direct motor drive or for countershaft.

No. 19 Small Saw Tenoner.
No. 20 Large Saw Tenoner.
No. 21 Regular Bevel Saw.
No. 22 Large Bevel Saw.
No. 23 8½ Irregular Dresser.
No. 24 6" Irregular Dresser.

We also manufacture metal working machines.

Write for catalogue

Pettingell Machine Co.

Amesbury, Mass.

Mention Canadian Woodworker

"Canadian Woodworker" Buyers' Directory—Continued

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Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TURPENTINE
Carter, E. T., Toronto, Ont.

TWIST WORK
Klise Manufacturing Co., Grand Rapids, Mich.

UPHOLSTERY
Oriental Textiles Co.. Oshawa. Ont.

UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

VACUUM PUMPS
Canadian Blower & Forge Co., Kitchener, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Acme Veneer & Lumber Co., Cincinnati, O.
Guelph Patent Cask Co., Scotstown, P. Q.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Nickey Bros., Memphis, Tenn.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Veneer Co., New Albany, Ind.
Standard Veneer Co., Portland, Me.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER DRYERS
Nichols Company, A. S. New York, N.Y.

VENEER SAWS
Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

WALLBOARD
Ontario Gypsum Co., Paris, Ont.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Sawmill Co., Des Moines, Iowa.
Maus Lumber Co., Chas. O. South Bend, Ind.
Penrod Walnut & Veneer Co., Kansas City, Mo
Pickrel Walnut Company, St. Louis.
Sullivan, Frank T., Buffalo, N. Y.

WASTE
Carter, E. T., Toronto, Ont.

WINDOW FRAME MACHINE
Atlas Mfg. Co., Orlando, Florida.

WIRE
Laidlaw Bale-Tie Co., Hamilton, Ont.

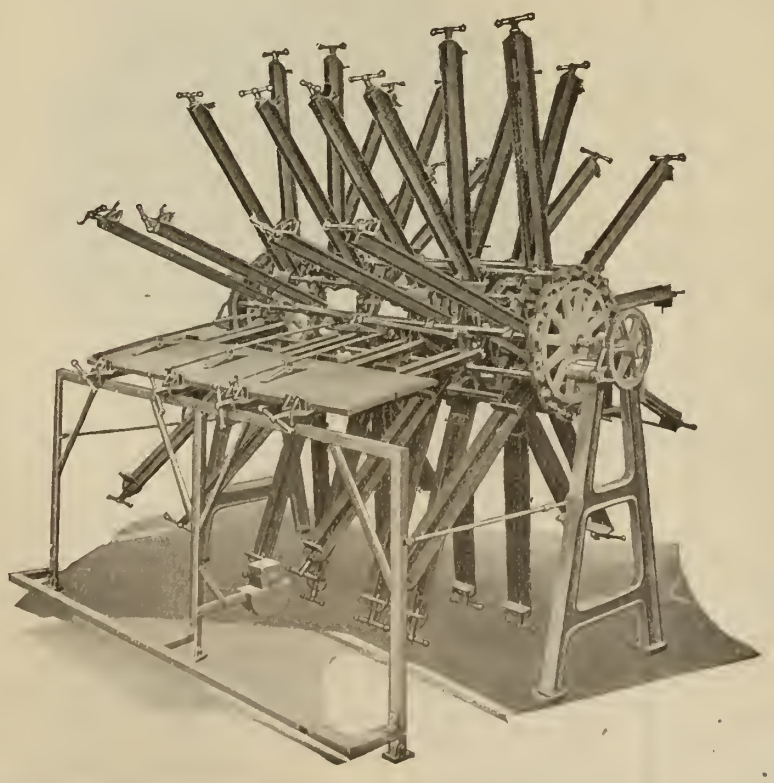
WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Pettingell Machine Co., Amesbury, Mass.

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.
Oliver Machinery Co., Grand Rapids, Mich.

Speed + Perfect Joints = Low Costs



The Taylor TRADE MARK

CLAMP CARRIER
for
Small Jobs in the Big Plant
All Jobs in the Little Plant

1. Natural standing position of operator.
2. No Juggling of heavy clamps.
3. No bending or walking.
4. No pile to overturn to get work glued first—simply move clamp one section.
5. Less space than equal number of clamps with work in, piled on the floor.

Any size to suit your work. 8 and 12-section wheel type. 16, 20, 30 and 40-section chain type. 4, 5 or 6 clamps per section for stock up to 42-in. wide.

Representatives:
A. R. Williams Machinery Co., Toronto. Canada

James L. Taylor Mfg. Company
Poughkeepsie, N.Y., U.S.A.

1 3/4" Veneered Door Sections

Ready to Machine

One Panel—Quarter Cut White Oak	$12.25
" " —Plain Red Oak	10.25
" " —Selected Red Gum	9.75
" " —Birch	9.25

Stiles 5" x 6-10 1/8 Veneer 2 Siles—One Edge Banded.
Top Rail 5" x 2-6 Veneer 2 Sides.
Bottom Rail 10" x 2-6 Veneer 2 Sides.
Panels 3/8 x 25 x 5-8 Good 2 Sides, Sanded 2 Sides 5 Ply.

For your rush orders, we carry a large stock at your disposal

George Rathbone Ltd.

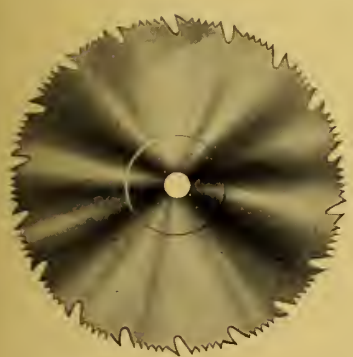
Northcote Ave., Toronto

ATKINS

STERLING QUALITY

SAWS and KNIVES ECONOMIZE

ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing



Atkins Sterling Quality Saws

and Machine Knives

Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.

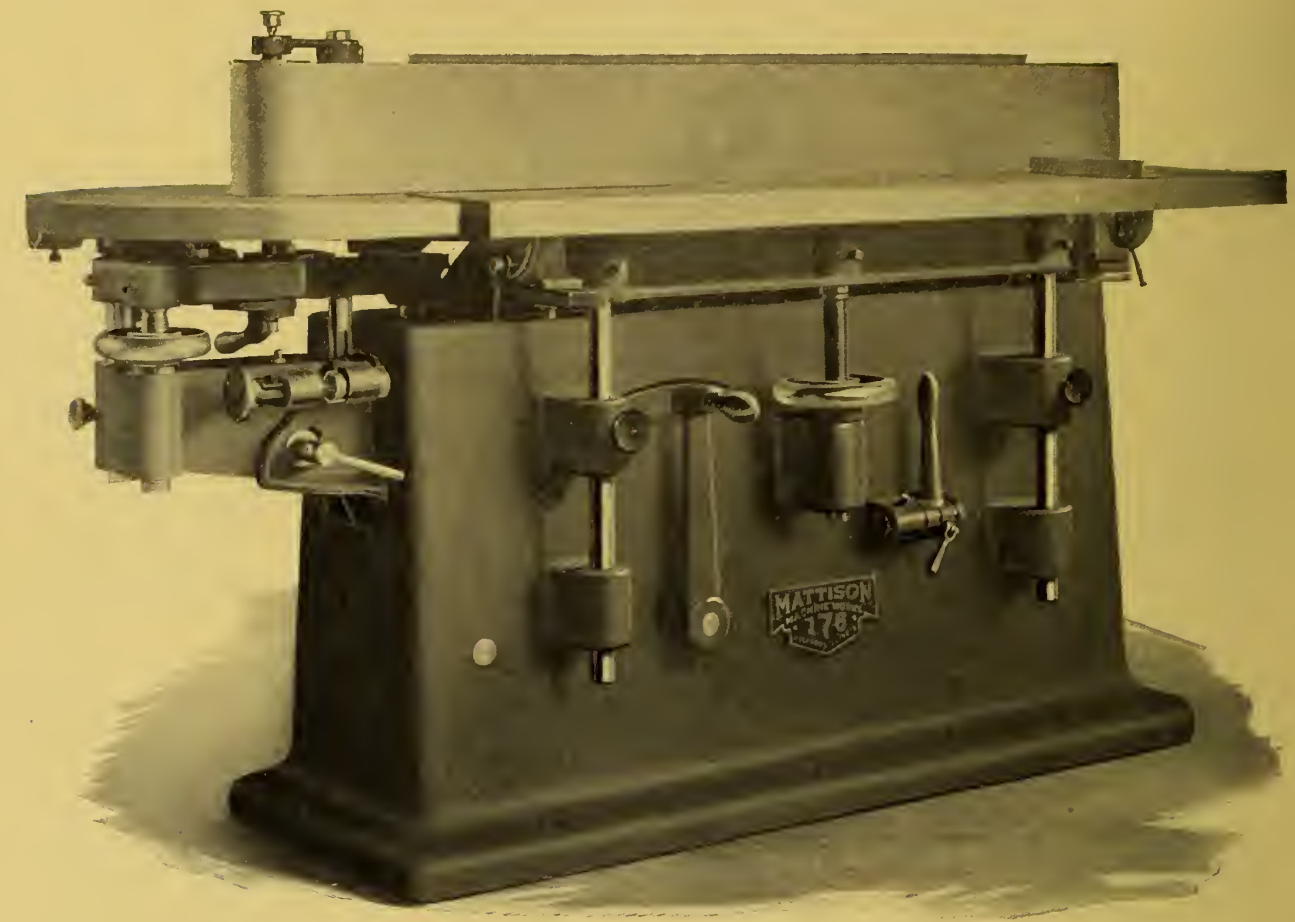
Write to-day for our Knife Booklet "C.W." and Pattern Template Paper.

E.C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

MATTISON
176
Oscillating Belt Edge Sander



—for a faster, better finish on shaped edges and small-membered work

FOR ordinary straight edge sanding, probably most any machine will do, even though it be of light, flimsy construction, but when it comes to fast, accurate sanding on irregular-shaped edges, the machine must be solidly built; its working parts must be carefully machined and fitted. Otherwise it is bound to vibrate, and every vibration shows up in the sanding.

And since the greatest amount of costly hand labor is required on the shaped edges, it is certainly good judgment to operate that machine which will not only give you production on the plain, straight or curved edges, but will also eliminate the hand sanding of practically all of your shaped work, including square and octagon turnings.

The Mattison 176 Oscillating Belt Edge Sander has undergone a number of mechanical refinements which place it far in advance of any other edge sander.

The new style ball-bearing spur and bevel gear drive running in a bath of oil does away with the difficulties that are often so troublesome on machines employing the spiral gear drive. The sanding spindle runs on ball bearings and is firmly supported by an overhead bracket. Belt is tensioned semi-automatically without the use of the bothersome idler pulley.

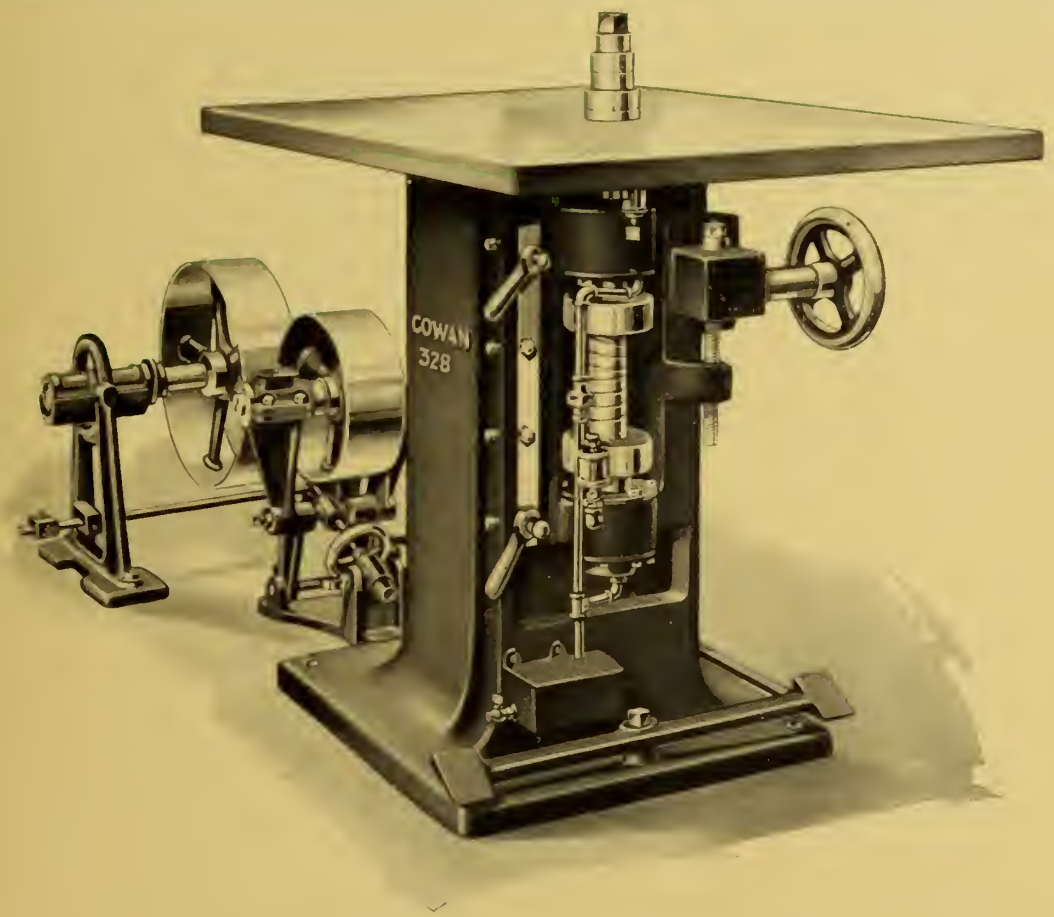
One big problem confronting manufacturers today is the lowering of production costs without impairing quality. If you would reduce time and labor on your edge sanding, investigate the Mattison 176 Sander. It is effecting big savings for others, so why not for you too?

Successfully Employs Stationary Forms
Send for Descriptive Circular

MATTISON
MACHINE WORKS
Rockford, Illinois, U. S. A.

Volume-Twenty Three TORONTO, JUNE, 1923 Number Six

CANADIAN WOODWORKER and Furniture Manufacturer



BALL BEARING SHAPER 328
Built with one or two spindles

We also make

Ball Bearing

Planers, Moulders, Jointers, Band Saws, Saw Tables, Etc.
Machines arranged for Motor Drive when Wanted

The best in Woodworking Machinery

COWAN & COMPANY OF GALT LIMITED

GALT, CANADA

Alphabetical Index to Advertisers, Page 12

Proven Worth

The complete confidence which the trade places in our organization has come because our name is synonymous for reliability.

But in the last analysis, results are the determining factors in any success—and ours has come because of the highly successful results our customers achieve with our products.

We distill alcohol for industrial purposes—in many grades for many uses—but only in one quality—the best.

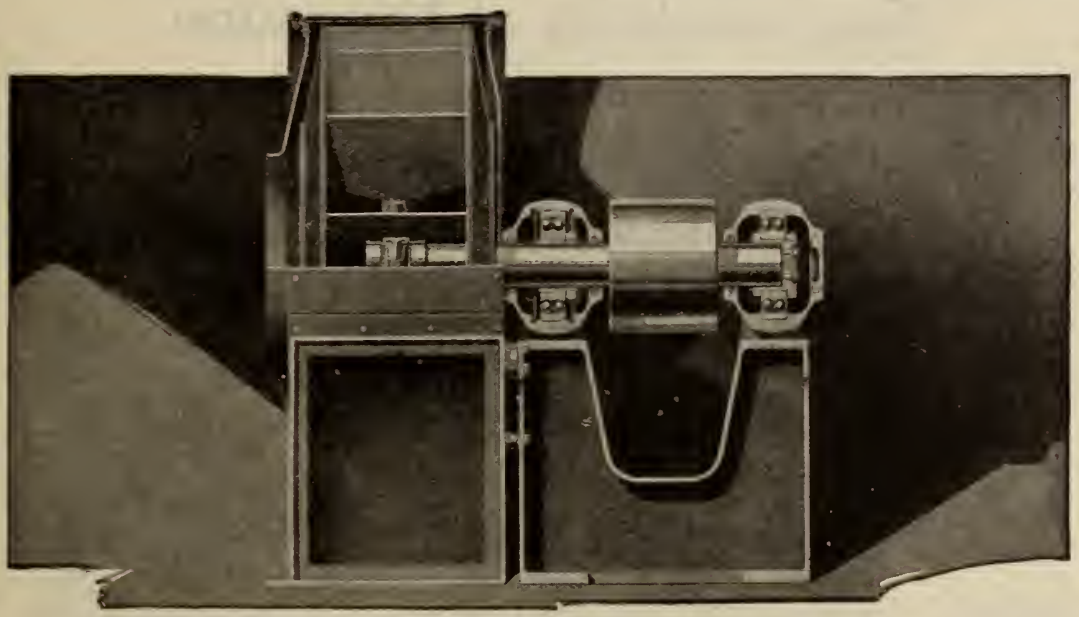
That is why we are "alcohol headquarters" for Canada. We invite your enquiries.

Canadian Industrial Alcohol Co., Ltd.
MONTREAL

Manufacturers of
MAPLE LEAF BRAND
Ethyl Alcohol-Cologne Spirits-Absolute Alcohol, B.P.
Methylated Spirits and Denatured Alcohol (all formulae)

Distributing Warehouses
Montreal-Toronto-Winnipeg-Vancouver-

SKF



Hiding Away Your Fan Won't Hide Its Troubles

HIDDEN away in inconvenient places such as basements, ceilings or other out-of-the-way spots (frequently out of sight and most of the time out of mind) your fan or blower often operates under unusual conditions of neglect. Breakdowns can be avoided only if the bearing equipment is absolutely reliable.

Self-aligning ball bearings marked **SKF** solve fan-bearing problems, particularly so when used in a construction consisting of a sheet metal frame riveted to a cast base. The unique design of the bearing automatically compensates for the misalignment which naturally follows this practice.

Lubricating once every three or four months is all the attention ball bearing equipped fans require. All danger of hot boxes or oil leakage is eliminated, thus saving repair charges and lowering upkeep costs.

Specify **SKF** marked ball bearings on your new fan equipment and replacements—then forget the troubles that curtail output and eat into your profits.

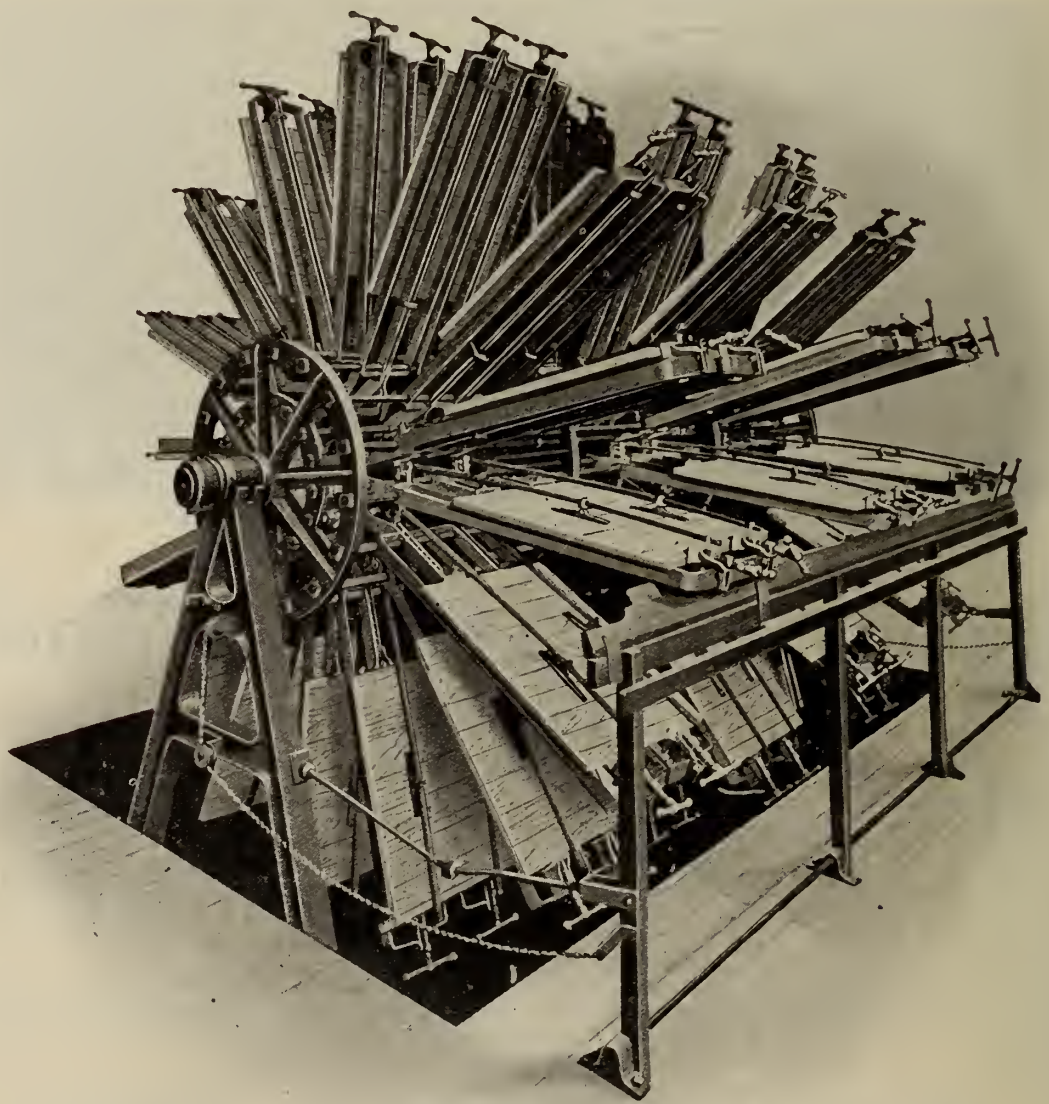
CANADIAN **SKF** COMPANY, LIMITED
TORONTO — MONTREAL

Normal View *Deflected View*

The

No. 200 Perpetual Revolving Clamp

for Simplicity of Operation



Wonderfully simple in operation is the No. 200 Perpetual Revolving Clamp. Its efficiency marks its use as practically indispensable for increased output of the better kind of work. For chair seats, furniture, dimension stock, school desks, refrigerator ends, special shapes, etc., it is without equal. It takes in 2½" in thickness up to 40" wide and 14' long. Many features of this machine will interest and please you. Write us for further particulars regarding this and many other machines that will assist for greater output.

Jackson, Cochrane & Company

KITCHENER, : : CANADA

THE FIRST USERS—

More than satisfied with

New No. 493 "Lightning" Single Drum Endless Bed Sander

Where the work does not justify installing a two or three drum machine.

Faster Work—Less Power—Less Sandpaper, and considerable less on original cost.

Investigate the merits of this machine.

Gear cover removed to show drive.

Either Belt or Direct Motor Drive

J. A. Fay & Egan Company

ESTABLISHED 1830

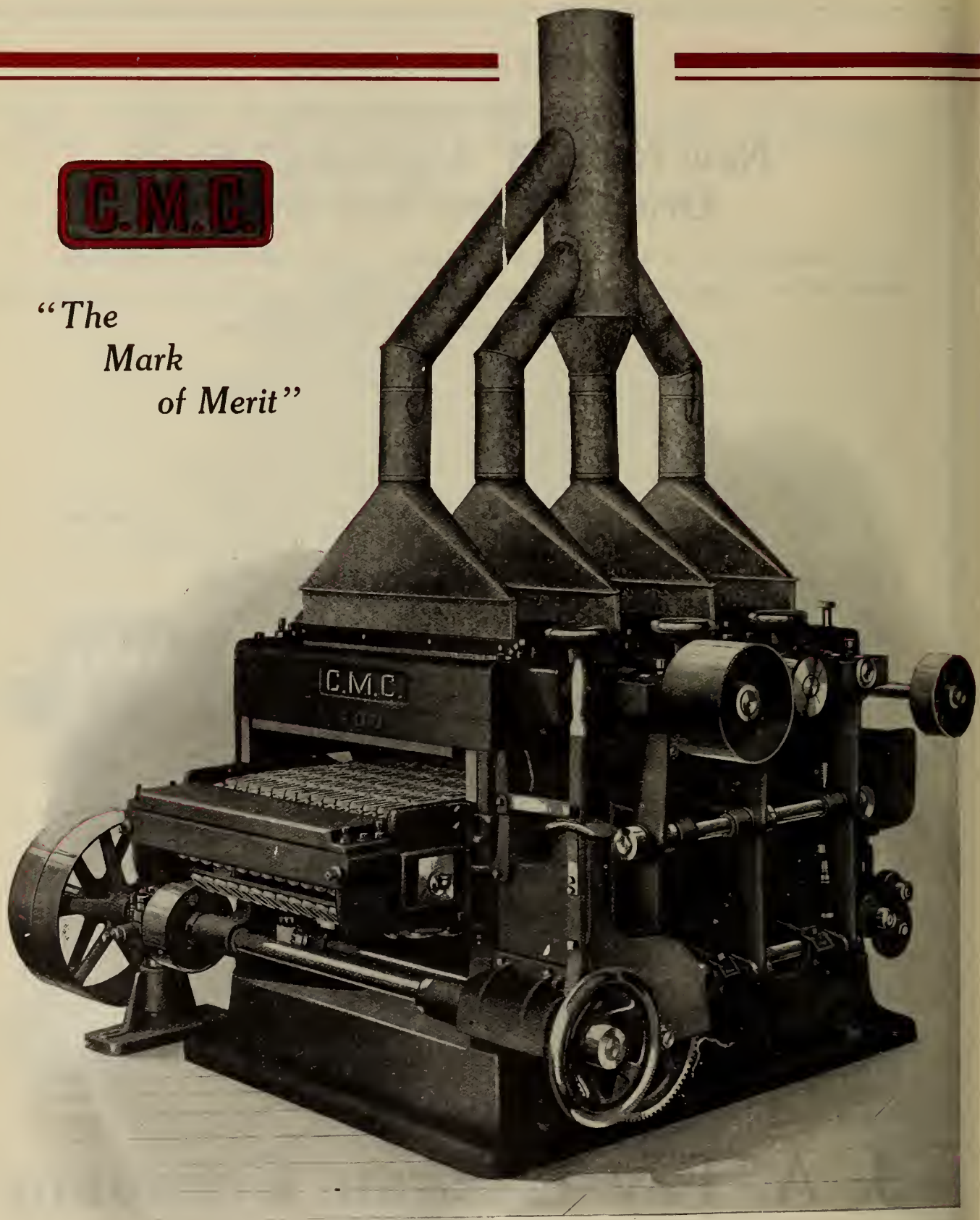
World's Oldest and Largest Manufacturers of Woodworking Machinery

2705-2805 Robertson Ave. (Oakley) Cincinnati, Ohio, U.S.A.

Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.
Branches: Montreal, St. John, N. B., Winnipeg, Vancouver

C.M.C.

"The Mark of Merit"



CANADA MACHINERY

GALT,

No. 400
Revolving Bed Sander

THE well known ability of this Sander to finely polish great quantities of work each day is the secret of its popularity. Especially is it a money saver for narrow stock as the operator can fill up the rubber padded revolving bed with narrow strips and it is astonishing the amount of good work which may be accomplished in a given time.

An oscillating device of unusual efficiency is regularly supplied. It runs with an easy motion and a spring cushion effect at the end of every stroke, keeping the bearings in perfect condition and adding greatly to the quality of the product.

THE DRUMS—SPIRAL WOUND TYPE

We confidently believe that in the Drums furnished on this Machine we have a feature of superior merit. Our paper tightening device (patented 1923) is a decided step in advance of anything previously offered. By means of a single wrench the clamping discs at both ends of the drum are equally tensioned and should any slackness develop while in operation due to dampness or other causes, this mechanism automatically takes it up at each end thus holding the paper always tight and smooth.

Each separate unit of the drum is balanced independently and after assembling the whole drum is tested on a special machine for standing and running balance.

This, the ever-tight paper, the perfectly balanced drums and easy running oscillator, gives a smooth running machine and a product with an unrivalled fineness of finish.

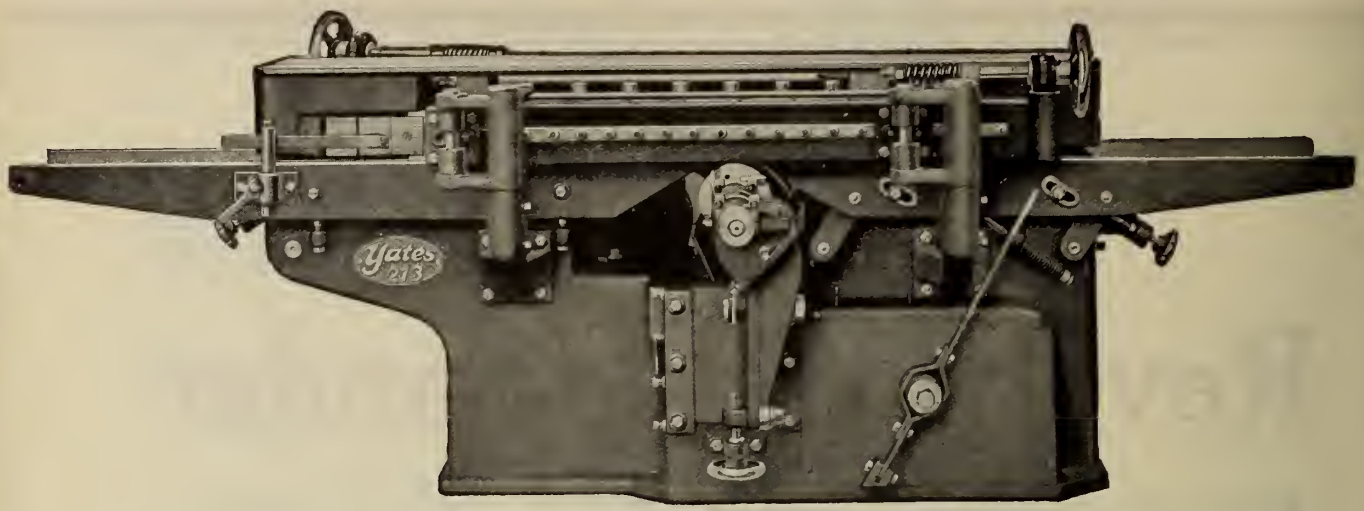
Prices on Request

Note:—Our Toronto Sales Office is Located at 721 Bank of Hamilton Building

We are manufacturers of Iron and Woodworking Machine Tools.

CORPORATION LIMITED

ONTARIO.



AN ACCURATE FAST ECONOMICAL GLUE JOINTER

Yates No. 213 Glue Jointer makes joints so smooth and straight that they can scarcely be detected in the finished product. Never has been equalled for speed, quality and quantity of work, low cost of operating and long service life. The nearest perfect Glue Jointer ever made.

The 213 is adaptable to many other kinds of work. Short and narrow stock can be accurately jointed and glued together, thus saving these small pieces that otherwise would go to the scrap heap.

A new and completely illustrated booklet has just been issued—every woodworker and manufacturer of wood products should have one—write for yours and we will mail it immediately.

P. B. Yates Machine Co. Ltd.
HAMILTON — ONTARIO

WORLD'S LARGEST MANUFACTURERS OF WOODWORKING MACHINERY

Sand and Garnet Papers

"BAEDER-ADAMSON" has built up such a remarkable demand in the Canadian woodworking industry that it is now manufactured in its own Canadian plant at Brantford, Ont.

The complete line includes sand and garnet papers and cloths, and is manufactured in both reams and rolls.

Samples and prices will be gladly supplied by your jobber or direct from the distributors—

Canada Glue Co., Ltd.

Brantford **Ontario**

BRANCH OFFICES:

117 Queen St., Montreal, P.Q.
27 Wellington St. East, Toronto, Ont.
Sutherland Bros. Conf. Life Bldg., Winnipeg.
A. T. Chambers, Dominion Bldg., Vancouver.

Keep the GUESS out of GLUE WORK

with

Mixes cold in cold water.

Economical —Spreads well.

WATERPROOF GLUE

UNIFORM STRONG HEAT-RESISTANT RELIABLE

Send for "CASCO" Manual

The Casein Manufacturing Company

Largest and Longest Established Manufacturers of Casein Products in America : :

15 Park Row, New York City

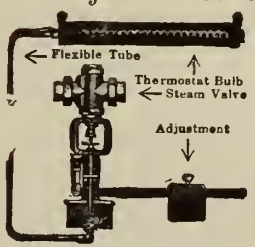
Branches in Principal Cities

Insure Your Green Wood

You know what your green wood costs you before it goes into the kiln, but what it will be worth when it comes out of the kiln is largely a matter of chance—if you depend upon a man's hand and judgment to control the drying heat.

It's fluctuating kiln temperature that causes checked, warped, or case-hardened lumber. You know that. Then stop that loss by preventing fluctuating temperatures. Insure your green wood by equipping your kilns with Powers Automatic Heat Regulators.

Powers Regulators are always on the job—accurate, sure, reliable. They insure a standardized kiln output—at a saving in fuel, in labor and time, and in your green wood. Let us send you proof.



The Powers Regulator No. 15

Specially designed to control temperatures in dry kilns, ovens, varnish and dry rooms,, etc. Requires no outside power for its operation.

Write for our 30 days' free test offer

The Canadian POWERS REGULATOR CO. Ltd

Specialists in Automatic Heat Control

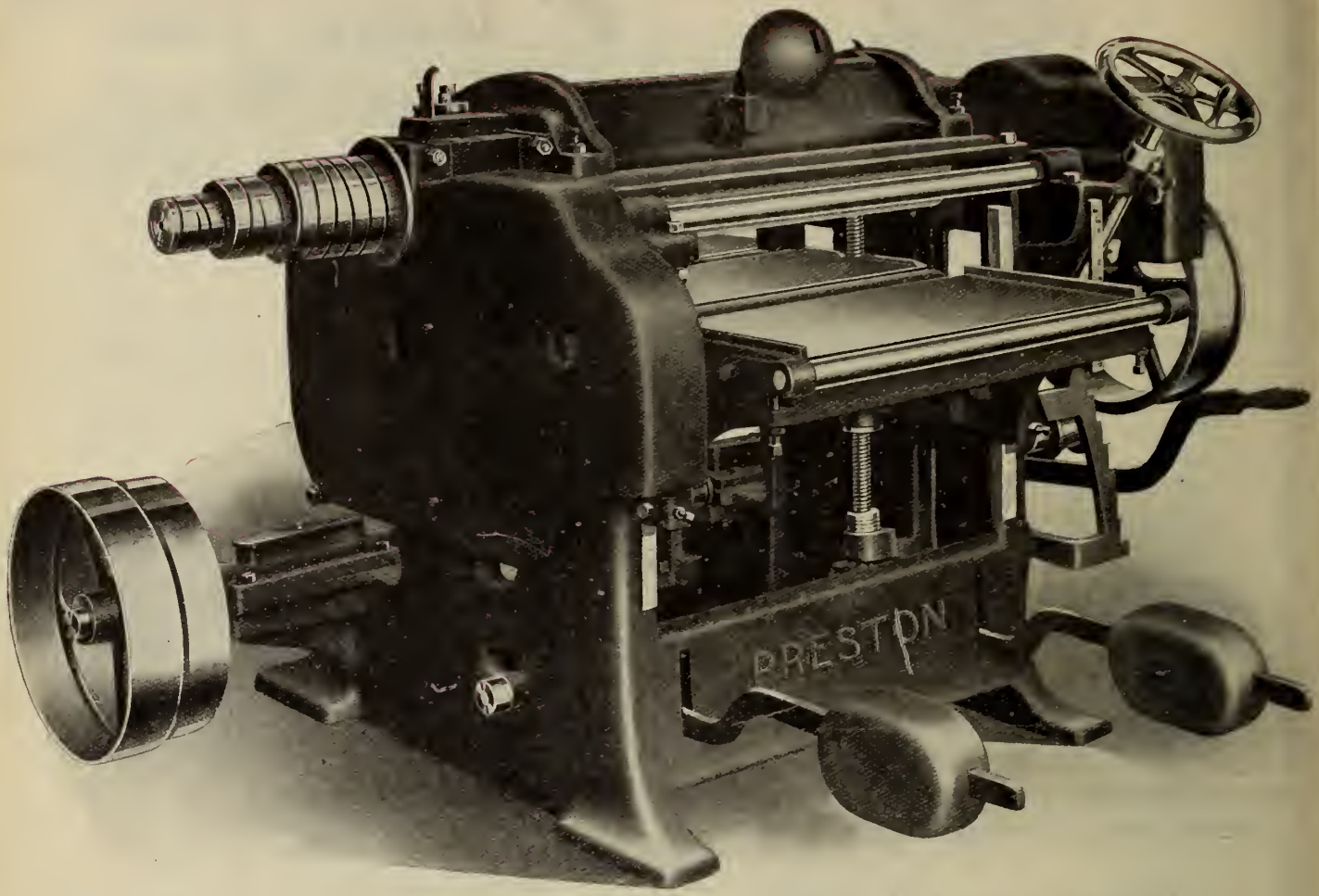
106 Lombard Street — Toronto, Ont.

Calgary, Alta. Halifax, N.S. Montreal, Que.
Vancouver, B.C. Winnipeg, Man.

Please consult your telephone directory for local address.

(2287)

No. 121 "Preston" Heavy Pony Planer



Cut Showing Standard Machine (note Guards)

This is our No. 121 Planer of improved design as now built

Planes 20″ and 24″ wide. 8″ thick

Features:—

1. Built with Straight Rolls (Standard Machine)
   or Divided Roll
   or Sectional Roll and Sectional Chipbreaker
2. Built with Square Cylinder with 2 carbon knives (Standard Machine)
   or Round Cylinder with 4 High Speed Knives.
3. Equipped with Whitney Type Babbitt Bearings (Standard Machine)
   or Specially selected SKF Ball Bearings.
4. Equipped with Stockbridge Electric Knife Grinder if desired, at extra cost.

Cylinder driven from one or both ends

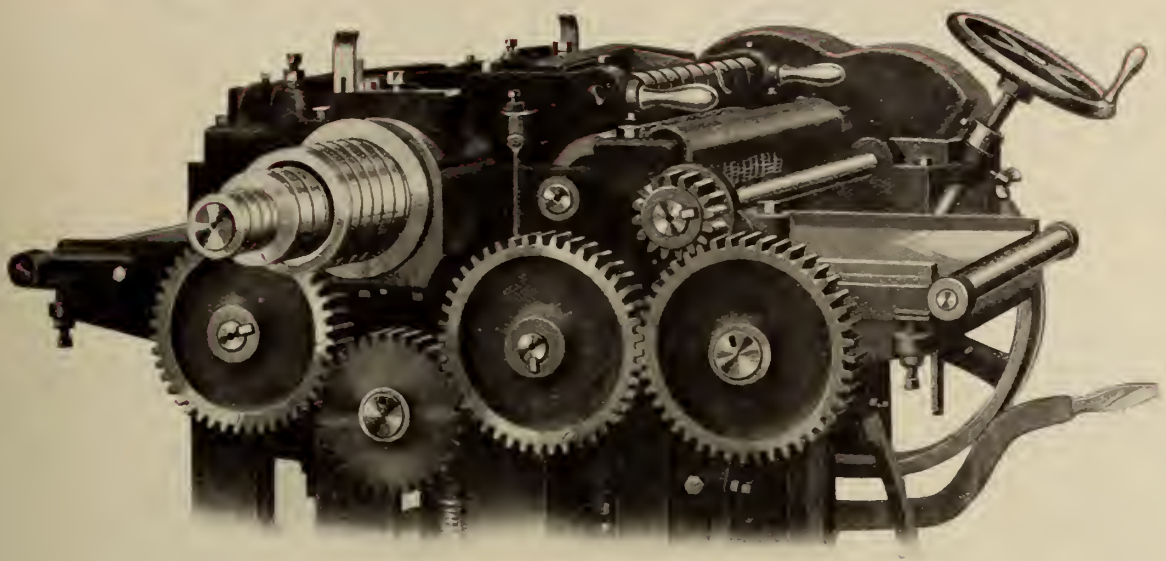
Every known improvement is embodied in this "Preston" Planer and in it we have produced a small planer which in quality and quantity of work produced will compete successfully with larger and higher priced machines

The Preston Woodworking

PRESTON,

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

No. 121 "Preston" Heavy Pony Planer



Above cut shows Machine equipped with

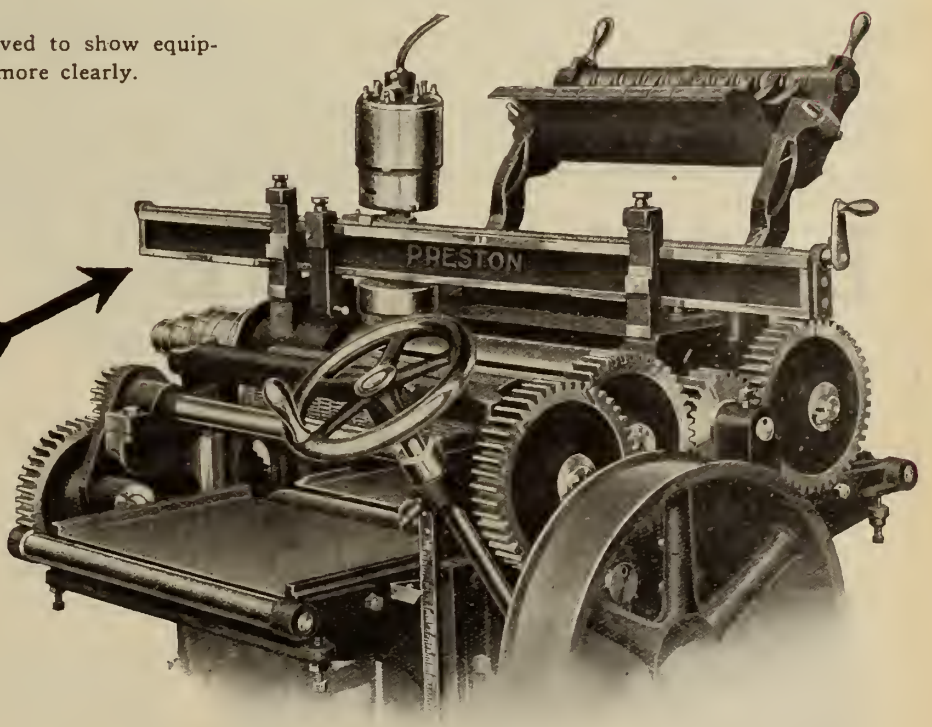
1. Specially selected SKF Ball Bearings.
2. Round Cylinder with 4 High Speed Knives
3. Sectional Roll.
4. Sectional Chipbreaker.

N.B. Guards are removed to show equipment and construction more clearly.

Cut at right is same as above but shows machine equipped as well with

Stockbridge Electric Knife Grinder and Jointer

with which the Cylinder Knives are ground and jointed right in their place on the machine.



We would like to talk "Planer" to you whenever you are in the market

Machinery Company, Ltd.

ONTARIO

Spcialists in Ball Bearing Woodworking Machinery

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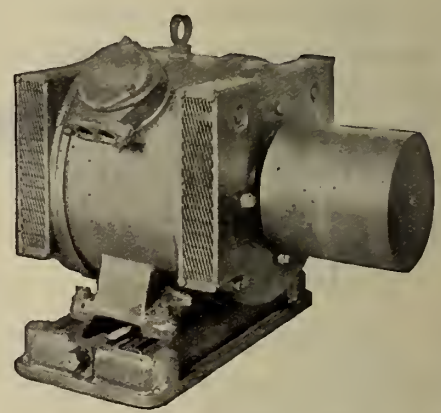
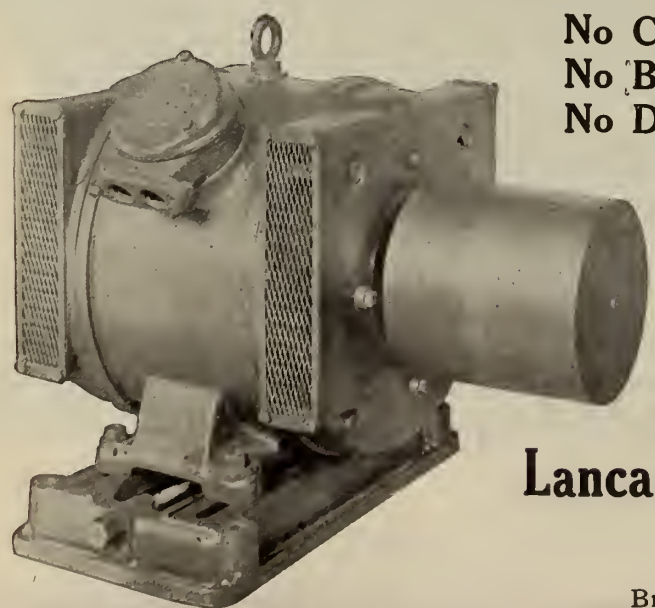
LANCASHIRE

ENCLOSED VENTILATED TYPE INDUCTION MOTORS

designed for use in woodworking plants, planing mills, etc.





No Clogging
No Breakdowns
No Delays

Lancashire protected motors offer the ideal solution to woodworking plants and others where the dust-laden atmosphere clogs ordinary motors, lessens their efficiency and increases the fire hazard. Lancashire motors are built to give the utmost in service with very little attention, only requiring grease and inspection every six months. A combination of ball and roller bearings are used in their construction and the finest of materials throughout.

Ask us how Lancashire Motors can help you.

Lancashire Dynamo & Motor Co.

OF CANADA, LIMITED
45 NIAGARA ST., TORONTO
Branch Office: 275 Craig St. West, Montreal

Send for this Booklet!

This booklet contains a number of articles which have previously appeared in various magazines. They are reproduced in a convenient loose leaf form with the permission of the original publishers and owners of the copyright. This series covers your wood drying problems and you will find invaluable information contained in its pages.

These articles have been written by engineers who are also experienced woodworkers. They know what woodworkers need for efficient and economical operation. The Grand Rapids Vapor Kiln is the only kiln made and sold by men who have had wide experience in the practical handling of various stocks and grades of wood.

The GRAND RAPIDS VAPOR KILN

will send these booklets without obligation to you. They cover practically every phase of wood curing problems

Send for this booklet today and learn why the Grand Rapids Vapor Kiln is in a position to serve you best. Learn also why the Grand Rapids Vapor Kiln stands pre-eminent in the field—**why 41 per cent. of our business last year came from repeat orders**—which means installation of additional kilns in plants where the Grand Rapids Vapor Kiln method has already proved its superiority. These are some subjects treated in this booklet: "Efficient Dry Kiln Layouts," Economical Arrangement of Dry Kilns."

"Correct Methods of Drying Lumber," "Scientific Lumber Drying," "The Engineer and the Woodworking Industry," "Lumber Drying Tests," "Moisture Content in Lumber," "Humidity in Dry Kilns," "Kiln Drying Lumber at Sawmills."

If you do not know this company you will find a relationship once established will be of great value to you, your business and your production.

Send for these booklets today.

GRAND RAPIDS VAPOR KILN Engineers, Manufacturers, Contractors MAIN OFFICE AND FACTORY **Grand Rapids, Mich.**

Represented on the Pacific Coast by
E. F. TINDOLPH, 5539 White Henry Stuart Bldg., Seattle, Wash.

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A. R. Williams Machinery Co. St. John, N.B.
The Oliver Machinery Co. Manchester, England
Hampe & Hartwig Hamburg, Germany

The Canadian Appraisal Co. Limited

The Pioneer Appraisal Organization of Canada

Established 1905

"An adjustment of fire insurance in accordance with existing values is a universal necessity. Many people who now believe that they are properly covered against the fire risk are, in reality, inadequately covered. Morever, realization of these facts is by no means general."

The Chronicle

Over 85% of the appraisals made during the past fifteen years of Canadian manufacturing and industrial properties have been carried out by us, aggregating some 5.000. properties, and include over 250 lumber and woodworking plants.

Correspondence invited

TORONTO
Royal Bank Building

MONTREAL
364 University Street

Free

WHENEVER you dream of a bigger, better plant, or plan for progress, read over our new literature for ideas—get a copy now and put it in your file—no obligation and you will have the latest ideas in this line. It contains material of help to your superintendent, shows different kinds of heating coils, temperature control, just the material you want in facing the growing demand for better, cheaper drying. GET YOURS, write your own name on this page, pin it to your firm letterhead and mail to us at 1542 McCarty Street, Indianapolis, Ind.

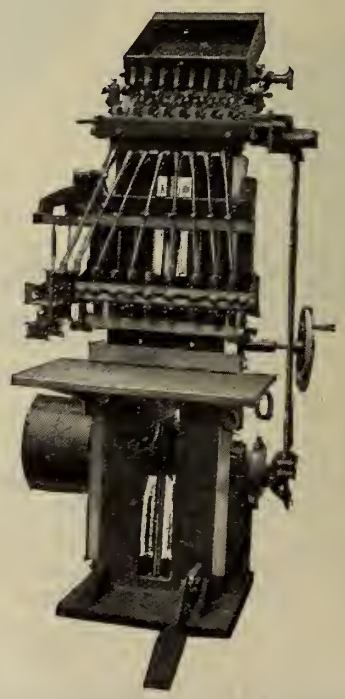
The STANDARD Dry Kiln Co.

NAILING AND CLEATING MACHINES

THIS ILLUSTRATION SHOWS OUR LATEST TYPE 8 TRACK SIDE ARM NAILING MACHINE. IT IS FITTED WITH AN IMPROVED OPEN FEEDER WHICH GIVES EASY ACCESS TO THE NAILS. THE DRIVING SHAFT RUNS IN BALL BEARINGS.

WE MAKE MANY OTHER SIZES AND STYLES.

LET US KNOW YOUR NAILING PROPOSITIONS AND WE WILL RECOMMEND THE MOST SUITABLE MACHINE TO GIVE YOU THE RESULTS YOU DESIRE.



Matthew Wylie & Co. Ltd.

81 PORTMAN STREET
GLASGOW

CABLE ADDRESS "PARALLEL"

New and Used Woodworking Machinery

We can save you money—look over our partial list and if you do not see your requirements—Write, wire or phone us.

Shaving Exhausters
50" American Blower Co., 16" Outlet.
45" American Blower Double.
No. 1 Buffalo.

Moulders
7" 4 Sided Goldie McCullough.
7" 3 Sided Cowan & Co.
12" 4 Sided Cowan & Co.

Shapers
Combination Jig Saw and Shaper Elliot.
2 Spindle Shaper.

Planers & Matchers
24" Major Harper Poney Planer.
30 x 12" McGregor Gourlay Double Surfacer.
12" Buzz Planer.
14" Planer and Matcher.

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20" Crescent Band Saw.
28" Elliot Band Saw.

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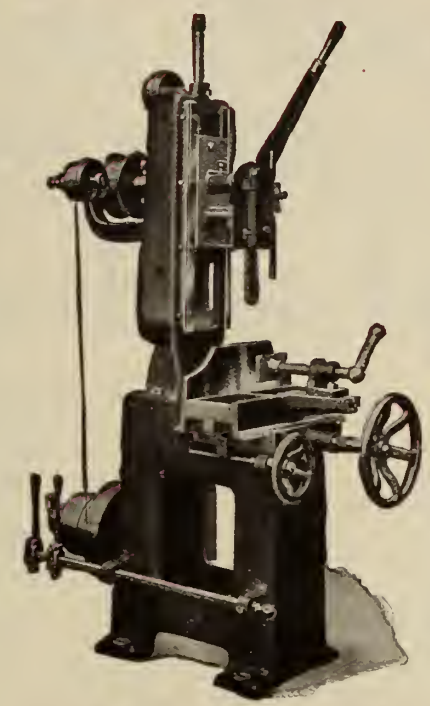
Agents for Elliot Woodworkers.

GENERAL MACHINERY CO.
67-69 Frederick St., TORONTO
TELEPHONE MAIN 2200W

SMITH'S COMBINED CHAIN AND HOLLOW CHISEL MORTISER



MADE IN ENGLAND

You can save money on shop equipment. Why not combine efficiency with economy. Practically two separate standard machines combined in one at less than the price of a single machine. High grade construction, phospor bronze bearings throughout. Hollow chisel mortising attachment fitted with Hoffman Ball Bearings.

The A. R. WILLIAMS MACHINERY CO., LTD
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HALIFAX, N.S. ST. JOHN, N.B. MONTREAL, P.Q. TORONTO, Ont.
WINNIPEG, Man. VANCOUVER, B.C.

BEAVER BRAND SAWS

The Biggest Value on the Market Today

Do you know that Beaver Brand Saws with their greater cutting qualities and extra long wear are the biggest value on the market today? Hundreds of saw users throughout the Dominion know it—so would you after the first trial. Better let us give you the full facts.

REPAIRS
Our facilities for repairing damaged saws ensures a first class job. Prompt service and reasonable charges.

Radcliff Saw Manufacturing Company, Limited
1550 Dundas Street West TORONTO, ONT.

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"Our new Cutler Kilns are drying 4/4" Birch from 19% to 5% moisture content in 5 days and in good condition with no checking, warping or honeycombing."

C. A. Cook, Treasurer,
C. A. Cook, Co., Cambridge, Mass.

Dry all your 4/4

Ash **Basswood** **Beech** **Birch**
Chestnut **Gum** **Maple** **Poplar**

from 25% to 5% moisture content in five days without degrade in a

Cutler Dry Kiln
Better Drying in Half the Time

Dollar for dollar you get greater drying capacity in Cutler Kilns.

Write for details and letters from users.

CUTLER DESK COMPANY
Dept. B **Buffalo, N.Y.**

Get a Line on National Kilns and the Moistat System from these Users

Merryville, Louisiana.
March 7th, 1923.

Gentlemen:

Your favor of the 28th in which you want us to advise you of our experience with the National Moistat Kiln: We have been operating three compartment kiln on Oak and Gum, green and dry, since about the first of December of last year. We are pleased to state that the kilns have been exceedingly satisfactory to us and they will perform as claimed by the National people.

We can dry 30 day and older inch Sap Gum to about 5 or 6% moisture in three to four days, and 90 day and older inch Oak in three and one-half to four days. This lumber comes from kiln without end checking, face checking or case hardening surface. In fact, the surface of the lumber is softer than if air dried, and less end checking and face checking than air dried.

Before we installed these kilns we had a contract with a large consuming concern to furnish them with a certain schedule of kiln dried lumber, and when these kilns were ready to operate, we were anxious to supply our customer according to schedule, therefore, we have used the kilns mostly on partially air dried lumber, and have not been able to give them an "honest to God" test on green lumber, but the tests that we have given on green stock are as follows:

1" Green Gum, eight to nine days.
1" Green Oak, fourteen days.

Will further state, that to demonstrate to you our faith in these kilns, we believe that within the next ten days we will give the National people another order to equal our present capacity which is three compartment kiln.

Yours very truly,
SHERRILL HARDWOOD LUMBER COMPANY.

The Type is Small But the Information Mighty Important

BILTMORE LUMBER & MANUFACTURING CO., INC.

Biltmore, N. C.,
October 7, 1922.

The National Dry Kiln Co.,
Indianapolis, Indiana.

Gentlemen:

Subject: Moistat System.

As to what we think of your kilns, before Mr. Knowles can get a letter to you, would state that we are now leading out a car of 2" Chestnut that went into our kilns about fourteen days ago, green from our saw, and this Chestnut shows about 11%. It is in excellent shape and we are very enthusiastic about what your kilns did for us on this green Chestnut. To say that we are pleased is putting it mildly but we are up against a bad feature or rather emergency and that is, two kilns are just a starter for us. We have had to turn down at least ten cars in the past few days and could use two more immediately; or as soon as we could get the building up. Would you care to ship us two more so we could install them about the first of the year? There is absolutely no doubt about the amount of business we can do here with this up to date equipment, and there is absolutely no question in our minds about your kilns being far superior to anything in this section of the country.

You will hear shortly from Mr. Knowles and I am giving you this other information in advance so you may know how we feel about those already installed. Please let us know if we can expect shipment of the two additional kilns about the time specified and greatly oblige.

Yours very truly,
THE BILTMORE LUMBER & MFG. CO.,
R. O. Young, Manager.

Union City Body Company Installs Eight Moistats

The Union City Body Company of Union City, Indiana, has nine National Dry Kilns, but with its rapidly increasing business, was faced with the problem of either installing more kilns or increasing the capacity of the present ones. After a thorough investigation, we installed eight Moistat Systems for them, which are operated by one man from two central stations. The Moistat is giving this company the **speediest drying service** it has ever enjoyed, and what is as important, is turning out a **cleaner, brighter** and **straighter grade** of lumber.

Write today for proof of how the Moistat can speed up production thirty to fifty per cent.

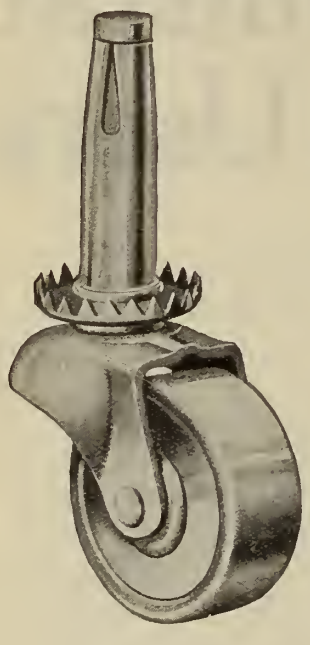
THE NATIONAL DRY KILN COMPANY

1117 East Maryland Street, Indianapolis, Indiana

Branches: Albany, N.Y.—Memphis, Tenn.

NATIONAL DRY KILNS

"National" Casters



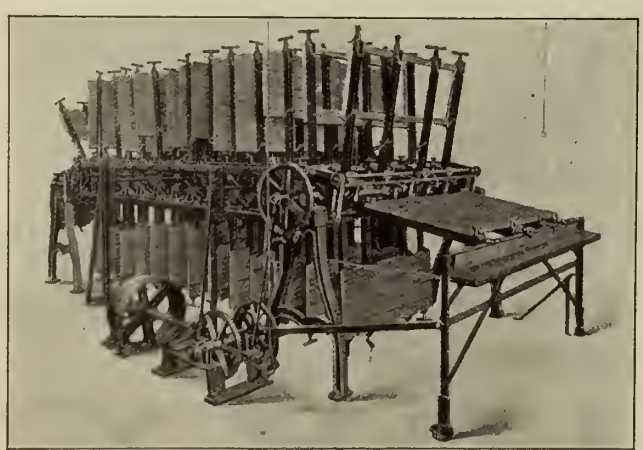
"National" Castors are strictly Canadian products of the highest quality, manufactured to meet the requirements of the Canadia trade.

Our No. 5 and No. 6 Bell Horn Castors (illustrated at the left) and our No. 3 Plain Horn Castor (illustrated at the right) are kept in stock in large quantities ready for immediate delivery. They are obtainable in Lignum Vitae, Plain Steel and Plated Finishes in both Nickel Plate and Brass. Put up in barrel or broken packages, with standard shanks and sockets.

Prices gladly quoted.

National Hardware
Company Limited
Orillia - Ontario

One Man Does the Work of Two
with a Billstrom Glue Clamp Carrier



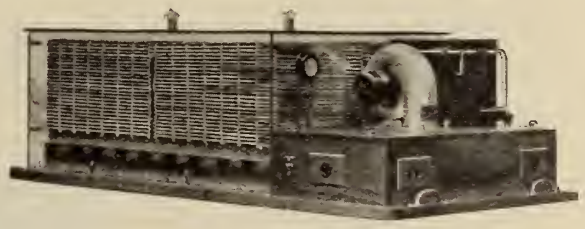
For every plant where much edge-gluing is done there is a real need for a Billstrom.
Here's why:—

The empty clamp is held at just the right height for the greatest convenience of the workman.
When the clamp is filled he pulls a cord, which carries the filled clamp away and deposits an empty one in its place.
One man can accomplish as much by using it as two men can do employing the old methods.
It holds the work off the floor until the glue has set, when the glued stock can be quickly removed and piled flat, thus greatly conserving space.
It reduces the labor and cost of edge gluing to the minimum.
There is a size to suit your particular requirements.

N. J. BILLSTROM
2002 NINTH ST. ROCKFORD, ILL.

This Mark on the Kiln

Sturtevant
PUTS AIR TO WORK



means controlled humidity, temperature and positive air circulation—thus ensuring a very low percentage of waste.

Sturtevant engineering service will show you definitely how to save time and handle more lumber with less overhead.

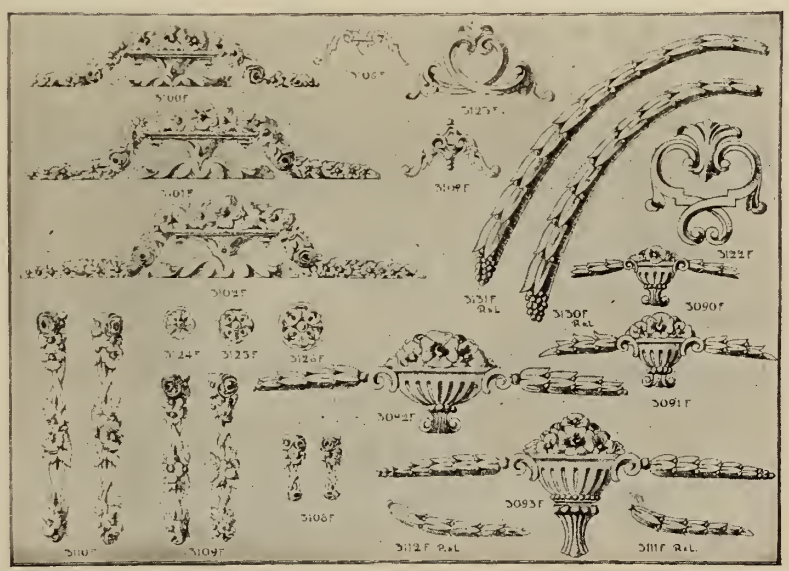
Get folder 602 and start your profits coming faster.

B. F. Sturtevant Co. of Canada

Montreal **Galt** **Toronto**

PERIOD CARVINGS *for* FURNITURE

Largest Manufacturers of Imitation Wood Carvings in the World Quality the Best. Prompt Shipments



Unlimited Facilities for Manufacturing High Grade Wood Carvings in Composition and Wood Fibre

Reproductions of Exclusive Designs Our Specialty

THE DECORATORS SUPPLY CO.

2543 ARCHER AVENUE, CHICAGO

New Catalog Sent on Request

PERKINS

183

TRADE MARK
REG. U. S. PAT. OFF.

UNIFORMITY ASSURED

The buyer of "Perkins 183" vegetable glue is not only certain of receiving a uniform product in **each shipment,** but also of obtaining a uniform product with **every shipment.** This uniformity is made possible by the "know how" that we have gained in years of experience since we first introduced vegetable glue to the wood using industries, together with the particular care that is used in the manufacturing and shipping of the product.

The Map Shows Ten Distributing and Warehousing Points.

All Orders Should be Sent to the South Bend Office.

Patents covering Perkins Glue have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy, and other foreign countries.

PERKINS GLUE COMPANY

Factory and General Offices:
Lansdale, Pennsylvania

Sales Office:
South Bend, Indiana

"Fibro" Wood Carvings

Made in Canada

JOHN WALTER & SONS LIMITED

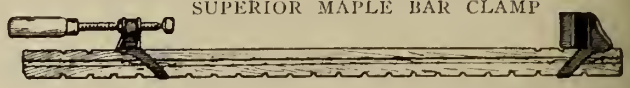
KITCHENER :-: ONTARIO

KANE VEGETABLE GLUE

The Superior Glue

Kane Manufacturing Co.
1832-42 S. Clark St.
Chicago — Illinois

SUPERIOR MAPLE BAR CLAMP



PATENTED

Solid Construction That Insures Long Service

Superior Maple Bar Clamps last indefinitely. They are made of Maple wood with adjustable head and tail blocks of malleable iron. The superior features of utility and construction of these clamps won the approval of Grand Rapids Factories and Training Schools who now use them.
Superior Maple Bar Clamps may be had at a very moderate cost.

Profitable Territory Open
Salesmen May Carry as Side Line

Write for Prices and Catalog Showing Line of Clamps and Hand Screws

Superior Hand Screw & Clamp Co.
1033 W. Leonard St., Grand Rapids, Mich.

The Peter Hay Knife Co., Ltd.

Manufacture the Best
PLANER KNIVES and CUTTERS
OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited
GALT, ONTARIO

MAPLE LEAF SAWS

There is a Maple Leaf Saw for every type of work – one that will reduce your cutting costs.

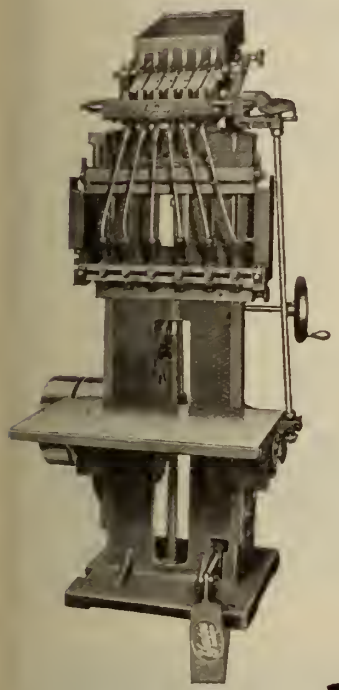
Maple Leaf Saws are made of extra refined Razor Steel tempered by our secret process.

Shurly - Dietrich
Limited
Galt - Canada

Store and repair branches at Vancouver

"The largest all-Canadian saw manufacturers."

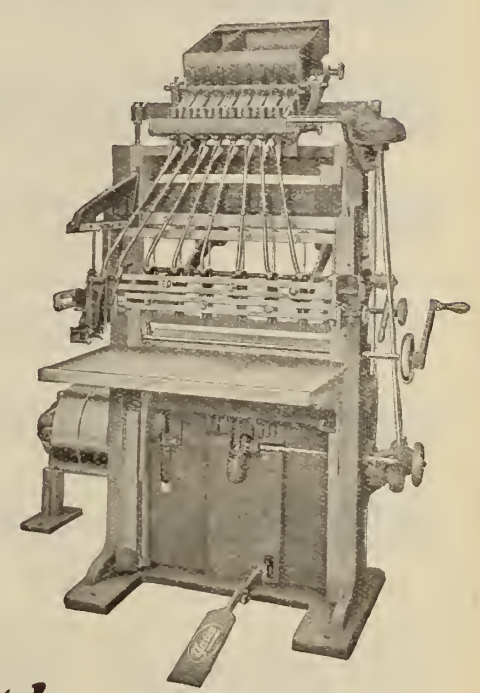
INCREASE YOUR BOX OUTPUT WITH THE LATEST IMPROVED NAILERS



CLOSED BACK TYPE

A Company installed a couple of our Nailing machines and wrote us later on saying. "There is no question, these machines have certainly increased our output and lowered our manufacturing costs."

Yates Nailing machines have been a success at every installation, as they have proven the saving which can be effected by their use. It may be worth your while to inquire about nailing machines for your business.



OPEN BACK TYPE

P. B. Yates Machine Co. Ltd.
HAMILTON - ONTARIO

You can make your building fireproof

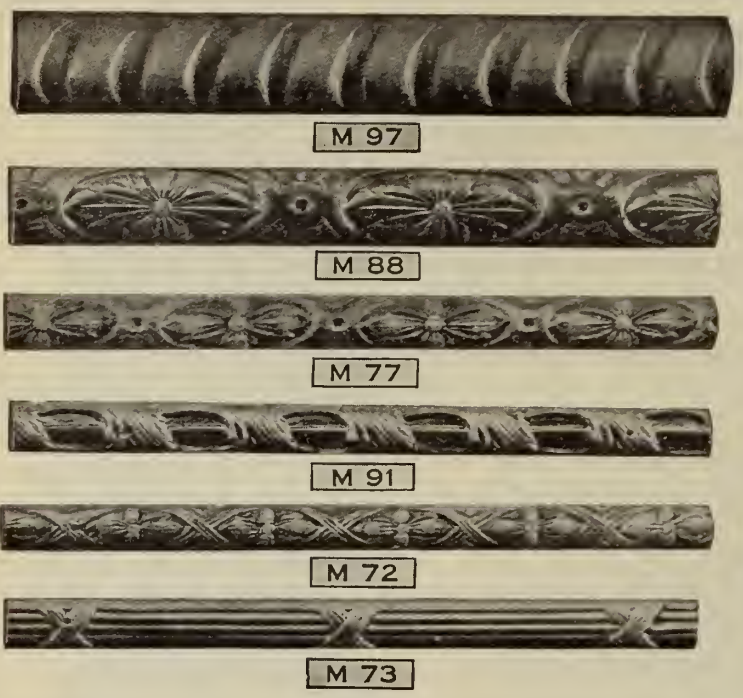
ECONOMICALLY - PERMANENTLY

IT often comes as a surprise to the owner of a frame building to learn that he can make it absolutely fireproof—easily—quickly—economically—permanently. Yet such is the case, and GYPROC fireproof wallboard is the answer. Scores of buildings are being fireproofed every year in this way, among which are many furniture factories, woodworking plants, sawmills, planing mills, etc.

Full particulars will cost you nothing. Write us today.

The Ontario Gypsum Co., Ltd.
Head Office: Paris, Ont.

Branches: 374 Beaver Hall Sq., Montreal, 106 Don Esplanade, Toronto
Mills Caledonia, Ont., and Lythmore, Ont.



MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.

Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

Insist on CANADIAN Slow Speed Mill Exhausters for Blow Pipe Systems

Save 20 to 50% of your Power

with Canadian Mill Exhausters and the scientific proportioning of piping by your blow pipe company in accordance with our suggestions.

Get Greatly Increased Durability

from operation at one-third lower speed in oversize bearings throughout. To whom shall we send Cat. 490-13 with full details.

CANADIAN BLOWER & FORGE COMPANY, LTD., Kitchener, Ont.

Toronto, Montreal, Vancouver, Calgary, St. John, Winnipeg

BLACK BROS.
CLAMPS

Where Black Bros. Clamps are known, there is no second choice. Know them.

Sold by Aikenhead Hardware Ltd., Toronto Vokes Hardware Co., Ltd Toronto J. L. Neilson & Co., Winnipeg and other leading dealers throughout Canada.

The Black Bros. Co. - Mendota, Ill., U.S.A

The Canada Wool Stock Company

Manufacturers of

Mattress and Upholstering Felts

A Specialty

Wool and Cotton Shoddy also Garnetted Felt.

D. HERMAN, Prop.

159-163 Walnut Ave. Adel 6536. Toronto

CARVED MOULDINGS, CARVINGS, CARVED LEGS

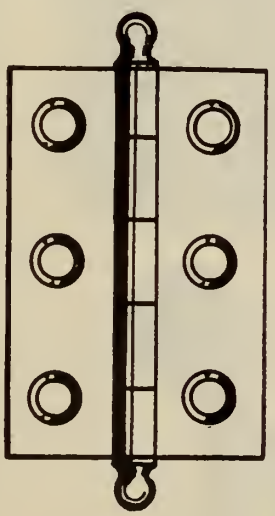
No. D-775 (Reduced One-Half)

No. D-763 (Reduced One-Half)

"KLISE" mouldings are carved, not pressed. Made in several hundred classic, period designs, in various sizes and shapes. Catalogue of legs and samples of mouldings sent on request. Send us your designs or samples of carvings for quotation.

KLISE MANUFACTURING COMPANY
Grand Rapids, Michigan

BUTTS



Both plain and ball tip in five sizes

1" 1¼" 1½" 1¾" 2"

In any desired finish

Larsen & Shaw Ltd.
Walkerton, Ont.
Manufacturers of
FURNITURE HARDWARE AND SPECIAL STAMPINGS

OAKEY'S
Glass Paper, Flint Sand Paper, Garnet Paper
IN SHEETS AND ROLLS FOR ALL PURPOSES
Rolls 50 yards long, 18 in., 20 in., 24 in., 30 in., 36 in., 40 in., 42 in. and 48 in., wide
SHEETS, DISCS, STRIPS AND BANDS can be made to Special Sizes to suit the requirements of Purchasers
JOHN OAKEY & SONS LTD., WELLINGTON EMERY AND BLACK LEAD MILLS LONDON, S. E. 1.

Canadian Agents:

F. Manley, 290 McDermott Ave. W., Winnipeg, Man.
Sturgeons, Ltd., 64-66 Richmond St. E., Toronto.
Sankey & Manson, 839 Beatty Street, Vancouver, B.C.
John R. Anderson, 36-38 St. Dizier St., Montreal, P.Q.

P · A · X

Private Automatic Exchange

ECONOMICAL

The Automatic Telephone

The P.A.X is a time saver—a trouble saver and is built to last. Pays for itself in any plant.

The P.A.X. is the only rapid, easy and economical means of inter-communicatoin between widely separated departmental heads of a business

Business needs action. The turn of the dial gives action any tme—all the time.

"A Pair of Wires and a Dial", telling of P.A.X. in operation is yours for the asking. Write our nearest House.

Northern Electric Company
LIMITED

MONTREAL TORONTO WINDSOR CALGARY
HALIFAX HAMILTON WINNIPEG EDMONTON
QUEBEC LONDON REGINA VANCOUVER

"Makers of the Nation's Telephones"

MANUFACTURING
Manual Telephones
Automatic Telephones
Wires & Cables
Fire Alarm Systems
Radio Sending and-receiving Equipment

DISTRIBUTING
Construction Material
Illuminating Material
Power Apparatus
Household Appliances
Electrical Supplies
Power & Light Plants
Marine Fittings

"Not Worn Out—But Useless"

VERY often finishing paper does not have a chance to wear out. Its thousands of sharp cutting grains are smothered or choked; sheets still adequately coated with abrasive are discarded because they are so filled or gummed up that they are useless.

The invention by Herman Behr & Co., Inc., of the Openkote Process of coating sandpapers, has removed this waste in the use of finishing paper.

Since its introduction, in 1918, Openkote Garnet Finishing Paper has been universally adopted by the Woodworking Industries.

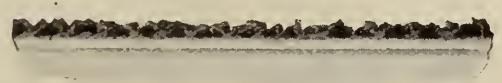
Openkote enables you to utilize every ounce of cutting power in the keen edged Garnet jewels. It gives 100% production throughout its longer life.

The last rub is as clean and as effective as the first because every kernel of grit does its full quota of work.

If you are one of those who have not yet adopted Openkote Garnet Finishing as your standard, send for working samples. Just specify grades desired; no charge, of course.

The "valleys" or spaces between the closely set grains of ordinary sandpaper quickly fill up, making the abrasive useless. Openkote Garnet Finishing, shown at the right, has many more and wider "valleys." That is why it lasts longer and cuts swift and clean throughout the life of the Garnet grains.

Magnified section of ordinary finishing paper showing that the lower layer of kernels, the *real cutting surface*, cannot start to work until the piled-up grains are ripped off. These piled-up kernels are the cause of most scratched work.



Behr's OPENKOTE Garnet Finishing.

In Openkote all kernels lie flat and separate upon the backing. Every grain is on the same perfect level, cutting uniformly, with the same pressure and all at the same time. Due to their size and shallowness, the wide valleys are less apt to fill up.

HERMAN BEHR & CO., Inc.

31-63 Tiffany Place Brooklyn, New York

Chicago · St. Louis · San Francisco · London · Grand Rapids · Boston

Montreal: 81 Grey Nun Street Toronto: 31 Sorauren Avenue

INVENTORS AND SOLE MANUFACTURERS OF OPENKOTE SANDPAPERS. LOOK FOR THIS TRADE MARK

The Shimer Round Safety Cylinder with High Speed Knives

A Round Safety Cylinder that will Appeal to the Buyer and the User for three Reasons:

The first is our adjusting nut for setting the knives. It is the only cylinder with properly located adjusting nuts for setting the knives, which, with our way, can be set to 1-1000 of an inch.

The second is our way of holding the knife without tapping into the head.

The third is the correct angle of cut for the knives.

Made for any of the different Makers' Machines and in Any Length Cylinder

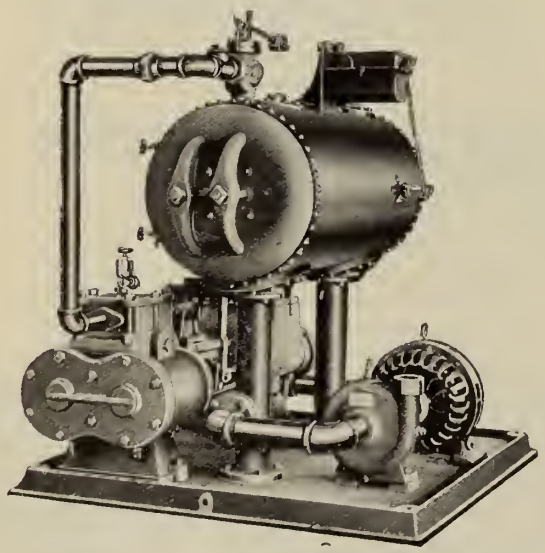
WRITE FOR PRICES

SHIMER CUTTER HEAD CO., OF CANADA, LIMITED

Manufacturers of Cutter Heads, Safety Cylinders and Grinders

GALT, ONTARIO

Prepare For The Emergency



Combination steam and motor-driven pump
W 190

The time will come when you will need an emergency pump.

Smart-Turner combination steam and motor-driven pumps are the ideal solution of boiler feed and heating problems. They remove any possible chance of a shut-down.

Write us for particulars of these pumps wherever you have occasion to install them.

Make use of our engineering service to get best results.

The

SMART-TURNER MACHINE COMPANY, LIMITED

Hamilton, Ontario

Representatives in Toronto, Montreal, Winnipeg and St. John

SIMONDS SAWS

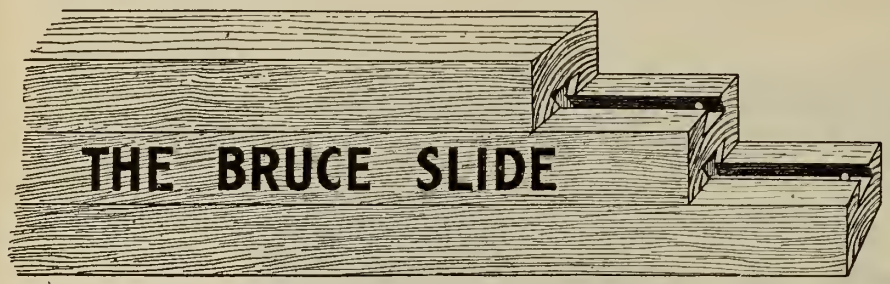
Greater production and longer runs are possible when SIMONDS SAWS ARE USED. Because they are made of special saw steel produced in Simonds Steel Mills, these saws hold their edge longer and require less fitting.

Write for catalog and prices

Simonds Canada Saw Company, Limited

St. John, N.B. MONTREAL, QUE. Vancouver, B.C.

TABLE SLIDES TABLE RIMS TABLE PINS



Makers of—

The "Bruce Slide"

BRUCE WOODWORKERS, Limited, Chesley, Ont.

BIRCH

MAPLE, SPRUCE
HEMLOCK, FIR

CRATING

Southern and Canadian
Hardwoods

Will saw to order
600,000 feet
Choice
Birch Logs

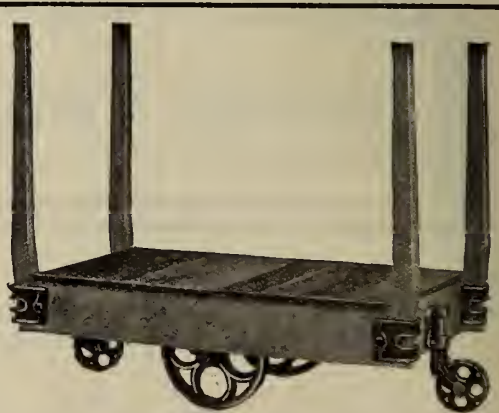
Percy E. Heeney
Kitchener, Ont.

FACTORY TRUCKS

Regular size 24 x 48.
Stakes 30 inches high.
Centre wheels 14½ in., diam., 2 in. face.
Steel stem castor wheel 6 1/4 in. dia., 1 1/4 in. face.
Weight 160 lbs.
Special sizes to order.

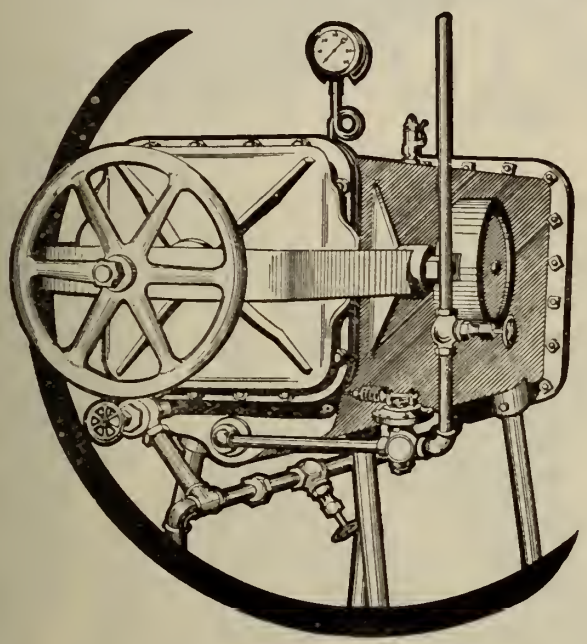
MANUFACTURED BY

P. E. SHANTZ, PRESTON, ONTARIO.



Factory Truck Style No. 26.

Wood Steaming Retort



Wood Bending Manufacturers:

This is one of our

Perfection Retorts

which we guarantee will save you . .

50% Less Breakage

in your bending department than your present process; that your stock will dry in your forms or presses in one-third less time; that you will have no stained stock; that your stock will retain its shape much better after being bent; that it will dry in your dry kiln in one half less time and that your steam consumption will be reduced at least 90 per cent.

The door can be opened and closed in ten seconds, and it is steam and water tight and for this reason can be placed anywhere in your factory.

Compare this IMPROVED RETORT with your present steam boxes, then write us for our Booklet on Progressive Wood Steaming.

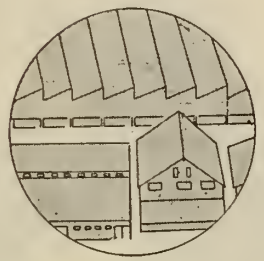
Made in Preston, Ontario

Perfection Wood Steaming Retort Co.

PARKERSBURG — WEST VIRGINIA

Superior Logs

grown on the deep rich soil of Iowa cornlands that produce greater strength and finer grain.



Cut in a Modern Mill

covering over seven acres and equipped with the most efficient types of machinery for walnut production.

By Skilled Workmen

selected with extreme care and working exclusively on walnut production.

these insure the Quality of IOWA WALNUT

If you are looking for walnut that is the best there is in quality, the kind that gives your product a shade finer beauty than the other fellow's, and helps to make it sell quicker at better prices, try IOWA Walnut.

We take great pride in its quality. We endeavor at every stage of its production to see that the hidden beauty of the naturally superior logs is brought out in the finished lumber and veneers.

Some of the best American cabinet makers show a distinct preference for IOWA Walnut. It costs no more than the ordinary kind. Investigate now.

Des Moines Sawmill Co.

1024 Murphy St., Des Moines, Iowa

Representatives:

H. R. Truesdell, Third Nat'l Bank Bldg., Rockford, Ill.
N. F. Owings, 447 Ionia Ave. S., Grand Rapids, Mich.
H. E. Wilson, 305 Norton Bldg., Louisville, Ky.
F. G. Cummings, wre Dartmouth St., Rochester, N.Y.

IOWA WALNUT

Taylor & Crate Hardwoods of All Kinds
A stock of 18,000,000 to 20,000,000 ft. of Hardwoods carried at all times at our big Buffalo yards.
RAIL AND CARGO SHIPMENTS Established 56 Years 2101 Elmwood Avenue

BUFFALO *"Buy and Sell Hardwood in this Market."*
FAMOUS LUMBER CENTER
Unequalled facilities for rapid dispatch, by Rail, Lake or Barge Canal, on all your requirements, large or small.
SUPPLYING THE HARDWOOD NEEDS OF THE NATION

Buffalo Hardwood Lumber Co. J. B. Wall, Pres't M. M. Wall, Treas. T. H. Wall, V-Pres't.
940 Seneca Street
We specialize in—WHITE ASH, OAK AND MAPLE

HUGH McLEAN LUMBER CO.
HARDWOODS OF ALL KINDS
Our Specialties—Quartered White Oak, Plain and Quartered Gum
940 Elk Street

ATLANTIC LUMBER COMPANY
HARDWOODS
Our Specialty—West Virginia and Pennsylvania Cherry
West Virginia Soft Red and White Oak. 1055 Seneca Street

BLAKESLEE, PERRIN & DARLING
A complete stock of seasoned Hardwoods
Including Ash, Basswood, Birch, Cherry, Chestnut, Cypress, Elm, Gum, Hickory, Maple, Plain and Quartered Oak, Poplar and Walnut.
1100 Seneca Street

T. SULLIVAN & COMPANY
NORTHERN
Gray Elm and Brown Ash
Niagara Street Corner Arthur

FRANK T. SULLIVAN
Specialties
Cherry, Walnut and Pacific Coast Woods
Main Office: 600 Ellicott Square. Yard: 2598 Delaware Ave.

1" to 4 No. 1" Common and 1s & 2s **HARD MAPLE**
Excellent widths and lengths.
Can kiln dry and surface.
G. Elias & Bro., Inc. Elk Street to the Buffalo River **Buffalo, N. Y.**

YEAGER LUMBER CO., INC.
Our Specialities
Oak Poplar Ash Maple
932 Elk Street

MILLER, STURM & MILLER
Hardwoods of All Kinds
1142 Seneca Street

STANDARD HARDWOOD LUMBER CO.
Hardwoods
Prompt Shipments—from Buffalo Yards or from Mill direct to you
8,000,000 feet Dry Stock on Hand. 1333 Clinton Street

Long-Bell Hardwoods are dependable

Why

Careful Drying, Uniform Grading

other reasons

Logs from our own virgin forests.

Each log selected and cut for the purpose for which it is best adapted.

Class of timber producing excellent widths and lengths.

Manufactured in our own hardwood mills, equipped with modern band machinery.

Manufacture supervised by experienced hardwood men.

Thoroughness given every detail of manufacture.

Particular care given to uniformity of thickness—carefully edged, equalized, trimmed.

End-butted with mitre toothed saws.

Easily identified by the Long-Bell trademark on the end of the board.

To insure dependability, Long-Bell Hardwoods are subjected to careful drying and strict, uniform grading.

The stock is carefully sorted at the chains.

Drying yard is arranged to give thorough circulation to stock in pile.

Every detail in sticking and drying carefully observed to insure best results.

Experienced inspectors grade lumber for shipment.

Double check inspection at cars in loading to insure uniform grades.

Same care exercised in loading in car as in manufacture.

The Long-Bell Lumber Company
R. A. LONG BUILDING Lumbermen since 1875 KANSAS CITY, MO.

We Want to Sell

1 car 4/4 1 & 2's Chestnut.

2 " 4/4 1 & 2's Plain Red Oak.

1 " 5/4 10" and wider White Oak. Step Plank.

3 " each 4/4 & 8/4 No. 1 Common & Selects Quartered White Oak 18 Months Dry.

2 " 4/4 1 & 2's Yellow Poplar Straight or Mixed Cars Band-Sawn, Soft Textured.

We operate our own Band Mill, Dry Kilns, Planers and Resaws.

Louisville Point Lumber Co., Inc.

1144 Fulton St. - Louisville, Ky.

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo

Hardwood and Yellow Pine for Immediate Shipment from Stock

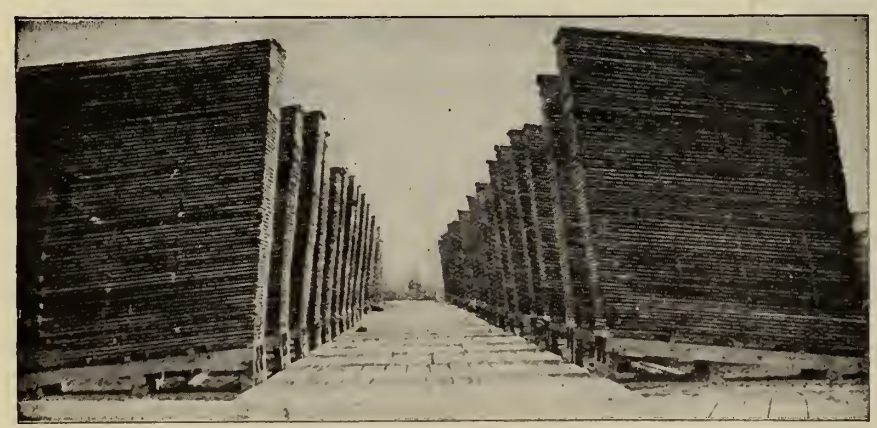
Complete Stock of Ply Wood Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Efficiency Marks Every Step of Our Service to You



Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

STRONG GLUE
means
STRONG JOINTS

The most critical Woodworkers have used DUNN'S GLUES for nearly Half a Century.

Uniform Shipments Guaranteed

Let us solve your glue problems. Our Service Department is at your disposal and places you under no obligation whatsoever.

Free working samples upon request.

THOMAS W. DUNN CO.
of Canada Limited
P.O. Box 672 MONTREAL, P.Q.

THURN-MAXSON
HARDWOODS

"The delight of the craftsman"

The success of our hardwoods in Canada, particularly among the most noted cabinet-makers, is convincing proof of their uniform high quality.

We should like to be serving you, too.

OAK, CYPRESS, GUM and other woods —in most any grade or quantity; immediate shipment.

Thurn-Maxson Lumber Co
SOUTH BEND, INDIANA
Owners of Chas. O. Maus Lumber Company

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

Mills Coal Grove Ohio
General Offices: 33 Rector St. New York City

From Missouri?

WALNUT

We will not tire you with a long article on the merits of our Veneers.

All Ads read just about alike—stressing **course of supply, quality of product, complete stocks, prompt shipments, courtesy of service, etc.**

We, too, could say all that and then some, but we won't.

Talk's cheap. We've got the goods.

WALNUT

STUMPS

BACK CUT

HALF-ROUND

ROTARY

SLICED

WALNUT

Let Us Show You

GEO. W. HARTZELL, PIQUA, O.

WALNUT SPECIALISTS

Because of its adaptability to good design and finish, Ritter Appalachian Oak is unexcelled for the manufacture of store fixtures.

For Superior Store Fixtures

Today, more than ever before, artistic design and careful cabinet construction are employed in the manufacture of store fixtures. For this purpose, oak has long been recognized as most desirable because of its strength, beauty and adaptability.

In keeping with the demand for better store fixtures, manufacturers are giving more thought to the character of the oak they use. Appalachian Oak manufactured by the W. M. Ritter Lumber Company most suitably meets their requirements.

Fine, subdued grain is characteristic of this oak. Because of this quality, it is adaptable to good design and can be easily and beautifully finished. Moreover, Ritter Appalachian Oak is mild in texture, which assures economy, both in kiln drying and working, and a finished product of unusual character and dependability.

For Full Particulars Consult our Representative or Write us.

W. M. RITTER LUMBER COMPANY

Largest Producer of Hardwoods **Annual Capacity—130,000,000 Feet**

General Offices **COLUMBUS, OHIO**

RITTER

APPALACHIAN OAK

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE, LA.

Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

BEDNA YOUNG'S
SOUTHERN
HARDWOODS

The quality and saleability of your furniture depends primarily upon your selection of hardwoods, for without good material the finest craftsmen are helpless. Play safe—always choose Bedna Young's hardwoods. Fine, figured, quartered oak a specialty.

BEDNA YOUNG LUMBER CO.

Jackson, Tennessee

From Old Kentucky

The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

Ash, Oak, Gum, Poplar, Hickory, Walnut, Chestnut, Beech, Maple, Elm, Sycamore, Cottonwood. Quotations promptly.

J. V. STIMSON & CO.
Owensboro - Kentucky
Bandmills: Owensboro; Campbellsville, Kentucky

Mercereau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern
HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS
Vice President and Manager of Lumber Dept.

A Service to Rely on

HARD WOOD

PEDWELL Since 1883 Service to Hardwood Users

Get Our Prices

The PEDWELL HARDWOOD LUMBER CO.

Office and Yard: Foot of Spadina Ave. - - TORONTO

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

TENNESSEE SCENTED CEDAR

1 in.—43,000
1¼ in.— 1,500

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	59,000	10,500	163,000	214,000
1¼ in.	31,000	.....	26,000	17,000
1½ in.	15,200	100	7,000	104,000
2 in.	8,000	.....	25,000	63,000
2½ in.	4,500	.....	4,300	3,000
3 in.	21,700	.....	4,500	4,000
4 in.	9,300	.....	900	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,600	.....	3,000	.....
1 in.	90,000	.....	140,000	81,000
1¼ in.	15,000	1,800	46,000	49,000
1½ in.	26,700	2,600	98,000	37,000
2 in.	16,000	.....	15,000	45,000
2½ in.	2,000	.....	.....	.....
3 in.	1,300	.....	.....	.....
4 in.	1,500	.....	300	.....

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
5/8 in.	17,000	7,000	15,900	3,000
¾ in.	55,000	173,000	6,000	26,000
1 in.	111,000	16,000	21,200	65,000
1¼ in.	50,000	9,600	200	.....
1½ in.	33,000	35,000	.....	1,500
2 in.	28,000	55,000	3,000	9,000
2¼ in.	3,200	3,200	.....	.....
2½ in.	110,000	39,000	2,000	1,800
3 in.	35,000	22,000	300	.....
3½ in.	4,500	3,000	.....	.....
4 in.	41,000	17,800	.....	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	.....	.....	.....
¾ in.	3,900	.....	6,300	3,000
5/8 in.	.....	.....	400	800
1 in.	56,000	400	65,000	3,700
1¼ in.	16,000	27,300	79,000	5,800
1½ in.	1,000	500	28,500	200
2 in.	700	.....	28,000	5,700
2½ in.	.....	.....	.....	.....
3 in.	.....	.....	1,200	.....
4 in.	600	.....	200	.....

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	51,000	191,000	.....	.....
5/8 in.	.....	53,000	21,000	2,400
1 in.	107,000	28,000	5,500	50,000
1¼ in.	62,000	107,000	9,000	2,100
1½ in.	62,000	75,200	5,000	500
2 in.	68,000	120,000	26,000	10,000
2¼ in.	1,500	1,400	.....	.....
2½ in.	94,100	34,000	.....	.....
3 in.	27,800	22,000	7,000	12,000
4 in.	8,600	5,600	.....	.....

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	.....	.....	4,700	500
1 in.	13,200	6,400	9,000	1,400
1¼ in.	5,900	.....	4,900	.....
1½ in.	400	.....	4,000	.....
2 in.	.....	.....	7,400	.....

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	.....	4,500	600	2,500
1¼ in.	14,400	15,500	2,000	9,000
1½ in.	.....	1,800	11,200	3,000
2 in.	8,100	7,400	300	4,700
3 in.	.....	.....	.....	300

QUARTERED SAP GUM

	1 & 2	No. 1C	No. 2C
4/4	.....	.....	1,800	.....
5/4	.....	9,000	.....	.....
8/4	.....	18,000	13,800	300
10/4	.....	15,000	14,300	.....
12/4	.....	300	.....	300

POPLAR

	1 & 2 18" up	1 & 2	No. 1 Com.	Bright Saps
¾ in.	.....	.....	700	200
5/8 in.	.....	18,000	24,100	11,900
1 in.	.....	63,000	93,000	23,700
1¼ in.	2,300	7,000	27,000	10,000
1½ in.	5,300	6,000	17,000	32,000
2 in.	.....	13,300	29,000	40,800
2½ in.	.....	4,000	.....	14,800
3 in.	.....	3,600	8,000	21,000
4 in.	.....	6,000	4,500	9,200

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2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually
the balace in Spruce and Tamarack.

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STOCK LIST

QUARTERED WHITE OAK

3	cars	4/4"	Fas.
5	"	4/4"	No. 1 Common.
1	"	4/4"	No. 2 Common.

PLAIN WHITE OAK

2	cars	4/4"	Fas.
2	"	5/4"	No. 1 Com. & Btr.
3	"	4/4"	No. 1 Com. & Sel.
3	"	4/4"	No. 2 Common.

QUARTERED RED OAK

3	cars	4/4"	Fas.
6	"	4/4"	No. 1 Common.
2	"	4/4"	No. 2 Common.

PLAIN RED OAK

2	cars	4/4"	Fas.
3	"	5/4"	Fas.
3	"	6/4"	Fas.
2	"	8/4"	Fas.
8	"	4/4"	No. 1 Common.
2	"	5/4"	No. 1 Common.
2	"	6/4"	No. 1 Common.

QUARTERED RED GUM

2	cars	4/4"	Fas.
2	"	4/4"	Fas. Fig.
2	"	5/4"	Fas.
2	"	6/4"	Fas.
10	"	4/4"	No. 1 Common.
2	"	5/4"	No. 1 Common.
2	"	6/4"	No. 1 Common.

QUARTERED RED GUM S.N.D.

5	cars	5/4"	No. 1 Com. & Btr.
5	"	6/4"	No. 1 Com. & Btr.
10	"	8/4"	No. 1 Com. & Btr.

ASH

4	cars	10/4"	No 1 Com. & Btr.
2	"	12/4"	No. 1 Com. & Btr.
1	"	6/4"	No. 1 Com. & Btr.
2	"	4/4"	No. 1 Common.
2	"	4/4"	No. 2 Common.
2	"	5/4"	No. 1 Com. & Btr.

SAP GUM

8	cars	4/4"	Fas.
3	"	5/4"	Fas.
3	"	6/4"	Fas.
15	"	4/4"	No. 1 Common.
8	"	4/4"	No. 2 Common.
5	"	5/4"	No. 1 Common.
5	"	6/4"	No. 1 Common.

COTTONWOOD

2	cars	4/4"	Fas.
6	"	4/4"	No. 1 Common.
3	"	4/4"	No. 2 Common.

ELM

2	cars	4/4"	Log Run.
2	"	5/4"	Log Run.
1	"	8/4"	Log Run.
6	"	10/4"	Log Run.
6	"	12/4"	Log Run.

Past History

Thirty-five years ago, Chapman & Dewey started business in Kansas City, Mo., operating one small mill and lumber yard. Ten years later, we purchased 100,000 acres of hardwood stumpage in the St. Francis Basin, Arkansas, a region well known for its high quality timber. To cut this stumpage, we put in one sawmill at Marked Tree and a small box-shop at Jonesboro, Arkansas. This venture in Arkansas proved a success; and for the past twenty-five years, we have been sawing our stumpage into Chapman & Dewey Hardwood Lumber. We now operate three modern band mills and one large modern box factory, turning out lumber of the uniform high standard we have always followed in the past.

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Lath, Lumber, Dimension.

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Door Panel, Piano Rim, Cypress Battery Stock.

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"Chickasaw Brand"

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We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar both plain and quarter sawed, Sound Wormy Chestnut, Cypress and Ash.

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La Tuque Turpentine contains no free rosin.

The quality is there
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Southern Hardwoods
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Genuine Louisiana Red Cypress

Plain Red Gum Quartered Red Gum	Plain Sap Gum Quartered Sap Gum	Plain Red Oak Quartered Red Oak	Plain White Oak Quartered White Oak

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8/4	"	"	"	100,000
10/4	"	"	"	150,000
12/4	"	"	"	150,000
14/4	"	"	"	20,000
16/4	"	"	"	40,000
4/4 x 4″	Clear face and better		Strips	40,000

BIRCH

4/4	No. 1 Common.	70,000
4/4	No. 2 Common	100,000

All at our Bay City Mills — Can give Service and Quality

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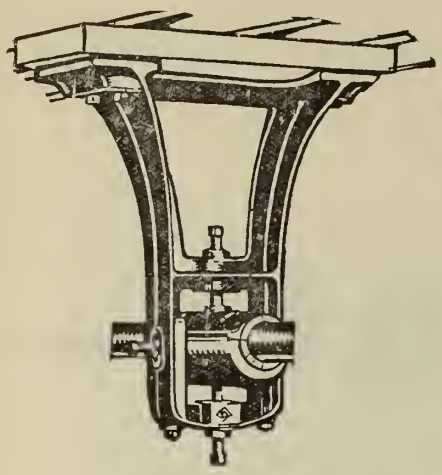
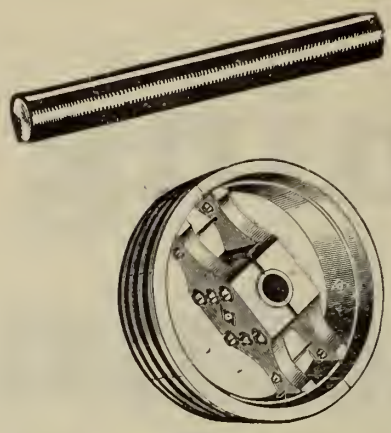
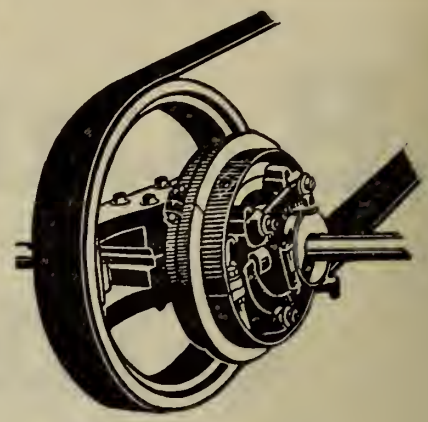

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SOFT YELLOW CYPRESS
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3,500′ 4/4″ 1s & 2s.
26,000′ 4/4″ No. 1 Com-Sel.
1,000′ 5/4″ 1s & 2s.
19,000′ 5/4′ No. 2 Com.
50,000′ 6/4″ No. 1 Com-Sel.
14,000′ 6/4″ No. 2 Com.

PLAIN SAP GUM
20,000′ 3/4″ 1s & 2s.
40,000′ 3/4″ No. 1 Com-Sel.
19,000′ 4/4″ Boxboards—9-12″
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Vol. 23 Toronto, June 1923, No. 6

Architects Lack Knowledge of Millwork

Any millman who reads the article in this issue by J. P. Larson will echo the complaints that he recites with regard to the architectural profession. Architects, many of them, if not most, in their relations with the woodworking industry, show not only a lack of knowledge of millwork methods but are disposed to act high handedly when dealing with millmen instead of seeking that co-operation that will benefit both parties most effectively. Thus the average architect regards as his undisputable prerogative the right to make binding decisions or settle controversial points. In so doing it is not infrequent that he trespasses on unstable ground and develops antagonism from the men and firms, who are working under his jurisdiction, which in time gives rise to distrust and suspicion. Mr. Larson, in developing this theme in the article referred to, does not absolve the millman from blame, for he points out that the millman is often guilty of attempting to substitute materials, of faking on the construction, of using inferior workmanship, of . cutting quality. These tendencies, to be sure, the architect should seek to curb and indeed so should every millman whose interest is in the integrity and high standing of the industry to which he belongs.

Aside, however, from that aspect of the relations of architects and millmen, there are many shortcomings that should and could be remedied. Thus there is constantly arising a great deal of confusion respecting plans and specifications—due largely to the lack of specialized knowledge on the part of the architect. There is great need also for the establishment of listing bureaus where quantity surveys may be carried out. Mr. Larson also accuses the architect of sacrificing practicability for effect and of urging too strongly the standardization of millwork. These and many other shortcomings are operating to the detriment of the woodworking industry. They should be remedied in some way or another so that the relations of architects and millmen might be happier and more profitable. How this may be done is what Mr. Larson attempts in some measure to indicate. In this connection his article is an important contribution to the trade literature and deserves careful reading and thought.

Building Activity Benefits Woodworking Industry

Millmen will be especially interested in the fact that building construction throughout Canada is now showing greater activity than at any time since the boom days of a decade ago. Contracts actually awarded during the first five months of this year, according to MacLean Building Reports, Limited, amount to $114,648,400, compared with $96,831,600 in 1922, and $85,326,700 in 1921. Ontario leads with a total of $62,871,900; Quebec second with $32,795,000; the Western Provinces, $16,337,500, and the Maritimes, $2,644,000. Building in Quebec shows marked activity, Ontario and British Columbia are ahead of last year, while the Prairies and Maritimes seem to languish.

During May, construction contracts awarded in Canada amounted to $40,697,200, compared with $34,827,300 a year ago. This is the largest May total since 1913. Residential building accounted for 36.6% of the May total and amounted to $14,897,100. Business building amounted to $8,555,000, 21.1%; industrial building $3,763,700, or 9.2%; public works and utilities $13,481,400, or 33.1%. The value of contemplated new work reported during May was $51,550,400.

The recent accelerated pace of building construction is natural and logical. The shortage of building during the war and post-war period is now being made up. In addition there is a well-defined movement of city-dwellers towards the suburbs. With these two influences operating together, it is not surprising that there has been such a tremendous demand for new construction.

Building on the outskirts of Montreal, Vancouver and many cities in Ontario continues very active. Most of the suburban building is residential—moderate-priced homes for owners' occupation. The increasing popularity of the automobile has caused a pronounced trend toward the suburbs which far-seeing men believe is only begun. It is apparent that it will take a good many years to satisfy the present potential demand for suburban dwellings.

Building activity in the United States is being hampered by a rapid and unjustified increase in material and labor costs. By way of contrast, building material prices in Canada have advanced less than 12% from the low of last year. In the main, conditions throughout the Dominion are satisfactory. Industry is extending its operations and showing a gradually widening margin of profit—there is little or no unemployment and a particularly easy money situation prevails.

Thus, it may be argued that the sash and door manufacturer, the makers of interior trim and fittings, even the furniture producers, have before them an excellent prospect of good business in the months to come. The large volume of residential building especially is a splendid indication of prosperity for the woodworker.

Reducing Repair Bills by Using Ball Bearings

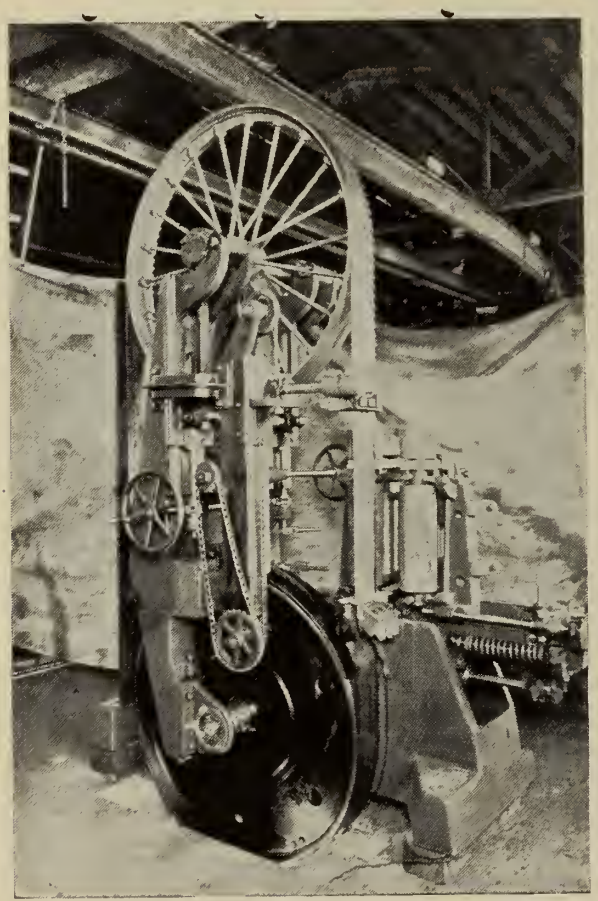
In the Field of Woodworking Machinery, Ball Bearings Have Been Wibely Accepted as an Ideal Means of Minimizing Friction, Increasing Machine Life and Improving Production Operations

By Designer

(Continued from last issue)

The service demanded of the bearings in band mills is extremely severe. The upper wheel bearings take the full pull of the heavy saw while running at high speeds while the lower wheel bearings must resist the pull of the belt in addition to the tension of the saw blade. Furthermore any wear in the bearings is sure to affect the quality of the work.

Both deep-groove and self-aligning ball bearings have been applied to band-type saws with marked success, the type or types of bearing used being



A vertical band resaw equipped with ball bearings

largely determined by the peculiar conditions prevailing in each particular case.

The amount of work that can be done in a band mill is greatly increased by equipping it with ball bearings. The upper wheel of the saw runs with great ease and is very responsive to any pull from the drive wheel. Overrunning and crowding is eliminated. An added refinement which makes the band mill easy to adjust properly is the mounting of thrust ball bearings on the raising screw.

The service required of a band re-saw is in many ways similar to that of a band mill. Cuts are heavy; the saw is large, is under heavy tension and running at high speeds. The advantages gained by equipping with ball bearings are, therefore, similar to those gained in band mills. The power saving is considerable and the work is greatly improved both in quality and quantity. There is no tendency for the saw to slow down under cut, because, by removing practically all the friction load, the power formerly wasted can be drawn upon as a reserve. No bearing adjustments or replacements are required, as even after years of service no bearing wear is discernible.

On band saws the service given by ball bearings has permitted higher speeds and consequently cleaner, quicker cuts.

Circular Saws

On circular and cylindrical saws self-aligning ball bearings have met with the enthusiastic support of both manufacturers and users. This type of bearing is employed in most cases because misalignment is generally a factor which has to be taken into conr sideration. Thrust, if considerable, is taken care of by means of a thrust ball bearing.

Saws thus mounted run true and require no periodic bearing take ups, despite the heavy belt pull, excessive overloading of the saw, lack of attention and extremely dirty working conditions. A little oil once every few weeks is all the attention required.

Ball-Bearing Shapers

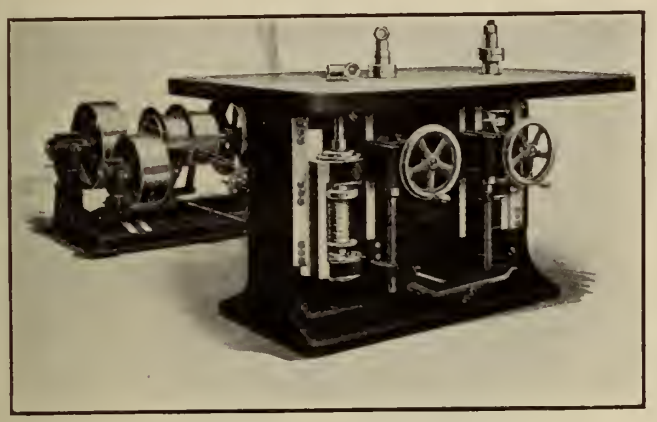
Shaper operators know that if their is friction in the shaper bearings sufficient to cause wear and misalignment, the consequent vibration soon becomes a potent force of destruction which rapidly ruins serviceability of the shaper. When ball bearings are used on shaper spindles, wear with its resultant troubles is eliminated.

Spindles thus equipped require less power, run smoothly and silently and remain absolutely true. As a result, the operator can do his work more easily and obtain a greater output. At the same time his machine is not subject to frequent shutdowns. Furthermore ball bearings eliminate the wearing, rubbing friction which causes burnt-out bearings and an endless round of troubles that lower production and eat up profits.

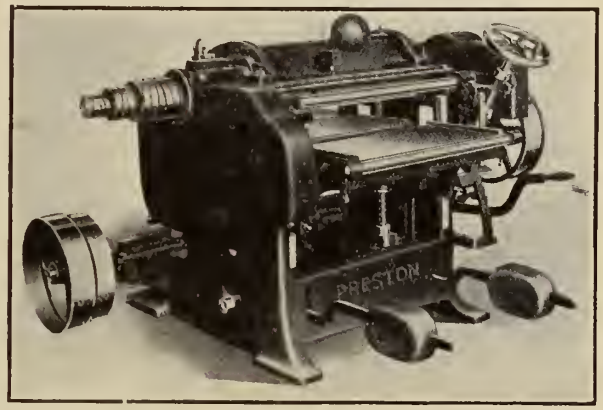
Both deep-groove and self-aligning ball bearings have proven themselves well adapted for this service, the type of bearing employed being dependent upon the conditions existing in any particular case.

Some idea of the service given by ball bearing equipped shapers can be obtained by reviewing the experience of an automobile body plant using eleven ball-bearing shapers. Some of these machines have been in constant operation for over eight years, and nothing has been required in the way of attention but the occasional replacement of a bearing, and lubrication. These machines are operated at 10,000 r.p.m., and in some cases 10-inch heads are used, some round and some square, carrying up to four knives. These machines are being run month after month with these heads and without top steady bearings. They are ordinary sized shapers, with a 42 x 40 inch top and 2 11/23" spindles. One machine in the outfit is extra heavy, with a 60 in. table and heavier

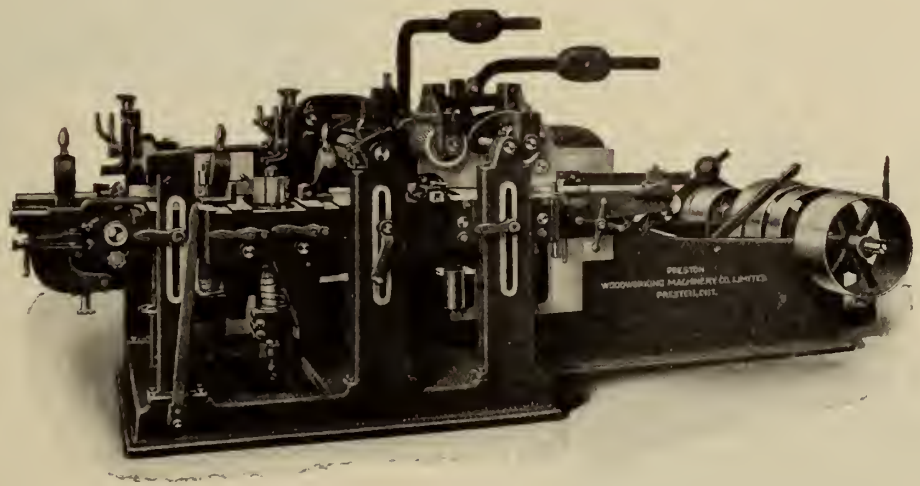
Typical Woodworking Machines in which Ball Bearings Are Used



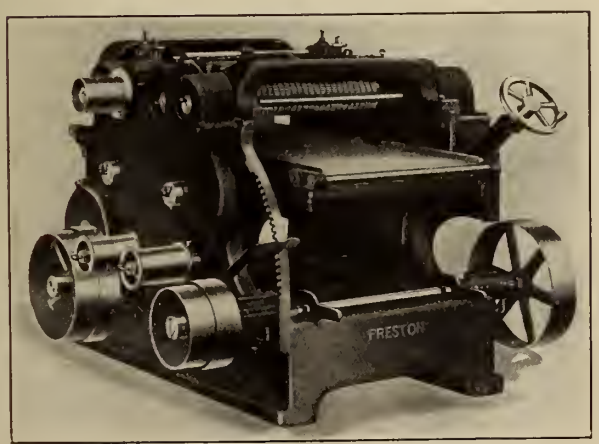
High speed ball bearing shaper



Heavy pony planer with ball bearings



Four-side moulder equipped with ball bearings



High speed ball bearing surface planer

Motor driven ball bearing universal saw table

The above illustrated machines are made by the Preston Woodworking Machinery Co. Ltd., Preston

spindles, with top-steady bearings, but the ordinary machines are used on just as heavy work as the big one is called on to do.

Another case is where a ball-bearing shaper has been running for eight years with the original bearings, and has had no attention whatever except occasional oiling. During the war this machine was operated for 24 hours a day in making dummy guns for training army recruits.

Planers, Surfacers, Jointers

In machines of this type the cutter cylinder setting is of utmost importance. If the cylinder bearings wear, poor work results and if they heat or bind, work stops.

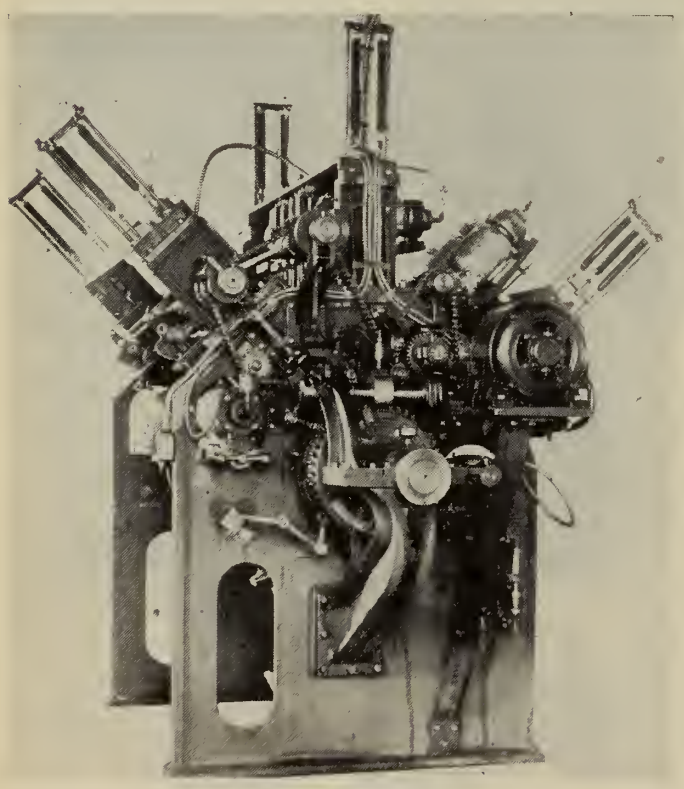
Ball bearings on the cylinder shaft prevent these troubles and relieve the operator from the constant annoyance of frequent oiling.

The cylinder is held accurately and permanently in its original setting, play and shake being impossible because ball bearings fit snugly.

Higher speeds may be obtained which in turn means more work and cleaner cut work. Cuts which formerly meant running the work through twice can often be made in one operation when ball bearings are used, the reserve power being that which plain bearings waste in friction.

Molders

An interesting series of current consumption tests on molders was made a few years ago at the kitchen-



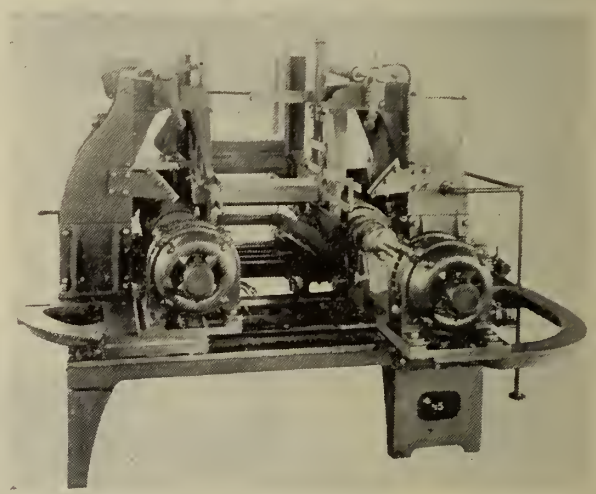
A ball bearing automatic woodworker with a capacity of 3,000 pieces per day which supplants nine men. Made by the Valley City Machine Works

cabinet factory of G. I. Sellers & Sons, Co. Two machines, one plain bearing equipped and the other ball-bearing equipped, were the subject of the tests. The plain bearing molder—a four-inch machine—was driven by a 20 h.p. motor, required 33 h.p. to start and obtained full speed in one minute, all parts running idle. The other machine, a 6-inch molder equipped with self-aligning ball bearings and five built-in motors, required only 10 h.p. to start and obtained full speed in four seconds.

In service, the plain-bearing equipped machine required an average of 17.4 h.p. for a cutting speed 75 ft. per minute while only 10.7 h.p. was required by the ball bearing machine for a cutting speed of 90 ft. per minute. Furthermore, the pattern run on the ball-bearing equipped machine necessitated heavier cuts than that run on the other machine.

Lathes

On lathe headstocks ball bearings have proven themselves particularly advantageous. Reliability, high speed and accuracy are obtained, together with freedom from bearing troubles. A distinct saving is also effected in the power required and maintenance is reduced to a minimum.



The above illustration shows the cutter drive on a lock-corner cutter. The cutter spindle and driving shaft are equipped with ball bearings. The line on the right-hand side has three bearings, one on each end of the cutter spindles and one directly in front of the flexible coupling. The left-hand side shows where the motor is coupled up. Here are two bearings, one at each end of the cutter spindle.

Miscellaneous Applications

In fact so successful has been the application of ball bearings to woodworking machinery of all kinds and so great have been the economies and advantages obtained that ball bearings have been applied not only to all of the commoner machines but also on special machinery as well. On one type of special woodworker 43 self-aligning radial and thrust ball bearings are used to keep all shafts and tools in their true settings, to reduce maintenance and to save power.

On pulleys and gears ball bearings have also been extensively applied, not only because of the power saving effected but also because of the cleanness and freedom from repairs that accompanies the use of ball bearings.

Recent years have also seen the rapid introduction of ball-bearing equipped electric motors in the woodworking industry. Aside from their cleanness and freedom from constant lubrication, motors equipped with ball bearings require less energy to deliver a stated amount of power. Furthermore the electrical efficiency of the motors is retained indefinitely as the rotating member maintains its original setting. Grease, the lubricant used, cannot escape from the sealed bearing housings onto commutators and windings, causing short-circuits nor is there any

danger of the armature dropping and hitting the field structure. Then, too, since play in the bearings is eliminated, vibration with its accompanying variation in brush pressure or direct-current machines is eliminated, thus preventing undue sparking at the brushes and avoiding the necessity of the frequent turning of commutators and the undercutting of mica.

In fact approximately 50 per cent of premature motor failures are attributed by a prominent motor manufacturer to bearing troubles. In fact, it is not unusual to find electric motors operating with original stators and rotors in good condition after 20 or more years of service during which time bearing renewals, and possibly shaft renewals, were the only repairs necessary.

With ball bearings all shaft wear is eliminated and even after years of service no appreciable wear in the bearings is noticeable. It is only logical to expect, therefore, that electric motors equipped with ball bearings will have a much longer life.

Transmission Equipment

One of the greatest losses in factories of all kinds and one that is often so fully appreciated is that due to friction. With self-aligning ball bearing hangers and pillow blocks on line shafting savings of 15% and upwards on one's bills for power are effected. Other savings in lubrication and maintenance result in such greatly reduced costs that a ball bearing equipped line-shaft equipment pays for itself in two years and yields a clear annual return of 50 per cent on the investment thereafter.

Instruments that Facilitate Kiln Operation

There are Several Devices with Which Every Kiln Should be Equipped in Order that Satisfactory Results May be Obtained—How They Should be Installed and Calibrated*

The successful operation of dry kilns requires constant care and attention. The results secured depend in a large degree upon the operator, and he should be impressed with his responsibility to bend every effort to turn out perfect stock. The operator must first familiarize himself with the kilns under his supervision. Before making the first run in a kiln, he should make a careful inspection to assure himself that it is mechanically safe, that the heating coils, traps, etc., are in proper working order, and that the instruments have been checked, calibrated, and properly located.

Inspection of Kiln

The kiln should be kept tight and mechanically safe and sound. Interior surfaces should be painted with a good kiln paint. Doors should be kept in good repair and fitting tightly; poor doors allow a great deal of heat to escape and upset the drying conditions. Rails and rail supports should be inspected periodically and the fastenings checked over. Pipes should be kept in proper repair, and their pitch to the drain end maintained to allow free flow of the condensed water to the traps. Suitable gratings or runways should be provided, so that the men entering the kiln can do so with safety and without walking on the pipes. The interior iron work and pipes should be protected by a good kiln paint, or the pipes can be painted while hot with a mixture of cylinder oil and graphite, if preferred. The coils should be inspected occasionally to make sure that they are all working, and the traps should be observed every day.

Calibration and Adjustment of Instrument

Success in all except the easiest kind of kiln drying depends upon the accuracy of the instrument and apparatus used in the regulation of the kiln and in the determination of the moisture content. It is therefore essential that the apparatus be maintained in an accurate operating condition. Most important is the matter of temperature indicating, recording, and regulating instruments, since through them both temperature and humidity are determined and controlled.

*From a new kiln drying handbook by Rolf Thelen who is in charge of the Section of Timber Physics, Forest Products Laboratory, U.S. Forest Service.

Thermometers

The simplest and most satisfactory way to calibrate indicating and recording thermometers is to compare them at different temperatures within their range with a standard or calibrated themometer of known accuracy. Each operator should have at least one such standard thermometer. The type recommended is a 12-inch glass thermometer, with graduations in degrees Fahrenheit etched on the stem, and having a range of 30 deg. to 220 deg. correct for ordinary purposes. Such a thermometer can be purchased for about $3 list price; and a brass protecting sleeve or case, recommended for use in kilns, can be had for about $1.50.

The usual laboratory method of calibration by comparison with a standard thermometer consists in immersing the standard and the thermometers to be calibrated in a vessel of water, which is constantly stirred to keep the temperature uniform throughout. The water is gradually heated, and the thermometers are read at intervals of a few degrees. The difference between the reading of any thermometer and the standard at any temperature is the error of that thermometer, and a correction of this amount must be applied to the reading to give the correct temperature. If the standard reads higher, call the correction plus (+) and add it to the reading of the thermometer, and vice versa. This method is applicable to glass-stem thermometers and other portable types. Wet-bulb thermometers are calibrated this way also, the wicks being removed during calibration. Once every six months should be sufficient for the calibration of glass thermometers.

Recording thermometers require more attention than other types on account of the comparative ease with which they may become deranged. They should be calibrated in water, as described for glass thermometers, the bulb and about a foot of the tube being immersed. This calibration will give a good idea of how the error, if any, varies throughout the operative range of the instrument. After calibration the instrument should be mounted in place in the kiln and then checked up at several points in its range by comparison with the standard thermometer hung close beside its bulb. These comparisons can well

be made during the run, if care be taken to read the instruments only after the temperature has been practically constant for 10 minutes, to allow the recorder bulb to overcome its natural lag. A full correction curve can then be plotted for the entire range, and the pen arm of the recorder adjusted to reduce this correction to the minimum. For making this adjustment there is usually provided a small screw at or near the pen-arm pivot, the turning of which moves the pen over the scale.

Wet-bulb recorders should be calibrated similarly, preferably without the wick, and double-pen instruments should have both bulbs calibrated, dry at the same time. An occasional check with a wet and dry bulb thermometer will show whether the wet bulb is really recording the wet-bulb temperature. It must be kept in mind that a reasonable amount of circulation past the bulb is necessary to secure enough evaporation to bring the bulb temperature clear down to the actual wet-bulb temperature.

Recorders should be calibrated in place at least once every two months, and oftener if they show a tendency to fluctuate abnormally. They should be handled carefully, in accordance with the manufacturer's instructions, special care being taken in charging charts not to bend the pen arm, and when filling the pen not to spill ink down the pen arms. Instruments should be returned to the manufacture when other than the clock mechanism needs repair. Competent jewelers can keep the clocks in order.

Although recorders can be obtained in weatherproof cases which need no special protection from the elements, it will be found advantageous to mount them in the operating room in some place which is readily accessible and as free from temperature changes as possible.

Thermostats

Thermostats do not as a rule require any calibration except to determine whether in the case of the wet bulb there is enough circulation past it to insure proper depression. This can be done by comparison with a wet bulb thermometer placed right at the regulator bulb. It should be read first without fanning and again after vigorous fanning. The drop in temperature will indicate the extent to which the regulator bulb represents the actual wet-bulb temperature.

It is necessary, however, to give the thermostat regulators occasional attention. In self-contained instruments which have a stuffing box on the valve stem a small quantity of oil and graphite applied occasionally on the stem at the box will help to reduce friction and make the instrument more accurate. The stuffing box should be tightened only enough to prevent leakage. In the air-operated type the small valves in the regulator head must be kept free from the oil which is apt to be carried by the air. An occasional washing of the head, by disconnecting the air lines and pouring gasoline through it, will keep the parts clean and prevent sticking.

Drying Oven

The drying oven needs no particular attention, except to make sure that it is maintaining a temperature of 212 deg. F. and not varying over 2 deg.or 3 deg. Variations in the oven temparteure will make an appreciable difference in the moisture-content determinations. Steam ovens are easily regulated by means of a reducing valve in the steam main, and electric ovens by an adjustable thermostat operating on the heating circuit.

Scales and Balances

Scales for weighing samples and sections should be sensitive to the smallest quantity which they are intended to weigh; if they are not, they should be repaired or returned to the factory. The absolute accuracy of the scales is not, however, of paramount importance, so long as all the readings are in proportion. Thus, suppose that a scale is 5 per cent in error; this error will apply just as much to the original and the current weights as to the oven-dry weight, and the moisture percentages will be just the same. This assumes, of course, that all the weighings are made on the same scale. This illustration is given simply to show that it is not absolutely necessary to have a set of standard weights for calibrating the scales. It is necessary, however, to be assured that the indicated weights are always in proportion. If, for instance, one sample weighs twice as much as another, the scales must show this. Specifically, this means that all of the weights and the poise must be in proper proportion. This can be readily determined on platform scales by any scheme which allows the same piece or quantity of material to be weighed with the different loose weights and the poise. To illustrate: A 200-pound silk scale has a single poise and beam graduated to 2 pounds by hundredths of a pound and loose counterpoise weight of 100, 50, 20, 10, 10, 5, 3, and 2 pounds respectively. This scale can be checked up as follows: Balance the beam accurately, set the poise at 2 pounds, and place just enough weight on the platform to balance. Then return the poise to zero and put 2-pound loose weight on the counterpoise. The beam should balance again. If it does not, it can be brought to balance by adding to or removing weight from the platform and then weighing again with the poise. Having checked the 2-pound weight against the poise, check the 3-pound weight by putting enough additional weight on the platform to balance at 3 pounds with the poise set at 1 pound and the 2-pound weight on the counterpoise. Remove the 2-pound weight, return the poise to zero, and place the 3-pound weight on the counterpoise. This scheme of comparisons may be continued through the entire capacity range of the scale.

Steam Gauges

Steam-pressure gauges, if used simply to give a general idea of the amount of pressure available or to check the operation of a reducing valve, need not be very accurate. However, the operator should know how to calibrate them so that he may do so when necessary. There are two general methods in common use; in one the gauge is compared directly with a standard test gauge and in the other the pressure to which the gauge is subjected is actually weighed by means of standard weights placed on a piston of known diameter.

In both cases the test pressure is produced by means of a small hand pump filled with oil, and provided with connections for the gauges. Pressures throughout the range of the gauge being tested are produced and the errors noted. Adjustment can be made by pulling the gauge hand from its pivot and putting it back again in the proper position. Testing equipment of this sort is carried by all boiler inspectors. If none is available, comparisons can often be made with other gauges, such as those on the boilers, and a fair idea of the accuracy obtained.

How Should You Allow for Depreciation?

The Deterioration of Buildings and Equipment Must be Compensated for—A Subject in Which Every Owner of a Woodworking Plant is Vitally Interested

By W. M.

Among the assets of practically all manufacturing plants are items that constantly depreciate from one cause or another whether the business is active or inactive; in fact in most cases the depreciation is greater when the plant is idle, unless a crew is maintained to keep things in order. Buildings deteriorate by reason of the action of the elements as well as by the wear brought upon them by the operations carried on in them. Machinery, tools and furniture also wear out and must be replaced. Materials and supplies, worked and unworked, may depreciate to scrap value either from the action of the elements or by becoming obsolete through changes in design. Obviously such losses must be compensated for if the business is to continue and make profits.

A careful distinction should be made between losses on capital account and losses on revenue account. If an uninsured building is burned, the loss so sustained is a loss of capital that is in no way connected with depreciation. No allowance which the owner can make for depreciation of other assets can properly be used to replace a building and such replacement should come out of new capital whether taken from savings or borrowed elsewhere.

If, however, the natural depreciation losses of building and machinery are not provided for in the costs, and as a consequence the balance sheet shows a deficit, when such losses are provided for, the business has suffered a loss in revenue account because of this procedure. Depreciation losses of this kind are a just charge against production, and as will be seen, should be included in manufacturing expenses.

Ways in Which Value of Property Decreases

The detail to which recognition is taken of depreciation will vary widely with the business. In the appraisal of public utilities, the following forms of lessening value are often recognized:

(a) Wear and tear or maintenance.
(b) Physical decay or decrepitude.
(c) Deferred maintenance or neglect.
(d) Inadequacy.
(e) Obsolescence.

Under wear and tear is included the ordinary wasting away of use and the action of the elements. All machines tend to wear out, the paint on buildings wears away, fences must be constantly repaired, etc. The rate at which such depreciation progresses will manifestly vary quite widely with the nature of the asset and the use it is subjected to.

Many assets, such as buildings and machinery, even though kept in the best of repair, will in time reach a state where repairs will no longer suffice, and the entire asset must be renewed. A horse is a striking example of this form of asset. His shoes may be replaced, but no repairs or renewals can stay the gradual breaking down of his physical power. In time he must be replaced. Depreciation of this kind is called physical decay, or decrepitude.

In refined methods of appraisal, account is taken of the value of an asset, as it really exists, and the value it would have if properly repaired. The difference in these two values is termed deferred maintenance or neglect.

Sometimes an asset must be replaced because it is no longer adequate for the work even when in the best of repair. Thus a steam crane may become too small for a growing industry. Such decreased value is known as inadequacy or supercession and, obviously, has no connection with wear and tear in the ordinary sense.

What Obsolescence Means

An asset may become of less value because of the introduction of new methods or machines. This may occur when the asset in question is as good as new, so far as production is concerned, yet the manufacturer cannot afford to be without the improved apparatus. Such lessening of value is called obsolescence and is one of the wasting losses which is often most difficult to foresee and make provision for.

A peculiar angle of this obsolescence feature occurred sometime ago when the writer was connected with a machinery firm. One of the appraisal companies telephoned our office for a price on a new back knife lathe. As nearly as I can recall the price at that time was $900.00. The party making the inquiry asked if we thought $700.00 would be a proper price to appraise some second-hand machines at if they were in first-class condition. We advised him if he wanted to sell the machines he would likely realize in the neighborhood of from $350.00 to $500.00 for them.

He could not understand this, which was not surprising. The reason these machines have to be sold for such a low price if placed on the market second-hand, is because there is hardly any demand for them. In days gone by nearly every furniture factory had anywhere from three to six of them. That was when furniture with turned posts, etc., was the fashion. Nowadays very few furniture factories use them and, therefore, the market is very limited. This is hardly a case of obsolescence. The machines will still do the work but the work is not there to be done.

In appraising public utilities or in settling the differences of opinion between partners or stockholders and bondholders, all of the above classes of depreciation losses may be and are taken into account. But for the ordinary business where the owner is desirous of knowing only the total of such losses it is usual to group them all under two heads, namely, depreciation and obsolescence, depreciation including wear and tear, decrepitude and neglect, and obsolescence including inadequacy also.

Repairs and Renewals Do Not Rectify Depreciation

It will be clear that repairs and renewals tend to compensate for depreciation losses, but from the foregoing it is also clear that in most cases complete compensation for depreciation by means of repairs is not possible. In large plants consisting of many units that wear out so quickly as to need frequent and complete renewals, such compensation is some-

times possible. However, even when a machine or building is kept in good repair, there must be, as already noted, a gradual lessening of its productive power that cannot be stayed by repairs and renewals.

On the other hand, extensive repairs and renewals may be made on an asset which may be considered as increasing its earning value and hence increasing its inventory value. Thus a machine may have a depreciated value of $5,000.00 when extensive repairs and renewals amounting to $1,000.00 may be expended upon it. If the producing power of the machine is thus increased, it would be allowable to increase the value of the machine to, say, $5,500.00, and make such an entry on the plant ledger. But it should be obvious that the earning capacity has been augmented before the inventory value is raised, otherwise the cost of the repairs should be carried to the manufacturing expense account.

All intelligent managers admit the necessity of making allowance for depreciation, but there is much diversity of opinion regarding the methods to be pursued in doing so. One of the reasons for this diversity of opinion is that businesses vary widely and, in addition, it is not always expedient to make as large a deduction for depreciation as may seem desirable. An old and still common method is to make an annual visual inventory of every asset, the total value so obtained being the apparent inventory value of the plant.

Determination of Depreciation

By comparison with the inventory of former years the depreciation is determined and deducted from gross profit before declaring dividends. While such a method seems practical and satisfactory for plants which close their books annually only, it has several disadvantages and there are objections to its use. A visual examination may or may not be sufficient for a correct valuation of the asset, and such methods of valuation require judgment backed by long practical experience. A periodical visual examination is, however, a good check on the methods to be described.

It may be noted in passing that the value of any asset will vary with the purpose for which such valuation is made. There is a great difference between the value of a plant viewed as a going concern and its value at forced sale. In appraising public utilities, several kinds of value are recognized; as, for instance, "service value," or the value of the asset as measured by its effectiveness, the value of "cost of value are the most important with which the factory manager and cost-keeper are concerned.

The original cost is the cost of the asset plus freight and cartage, but excluding foundation and reproduction," at current market prices, etc. For the usual case of factory inventory, however, the original cost, residual or scrap value, and the present erection costs, since these are irrecoverable and should be included in preliminary expense and written off independently. Some accountants include erection costs in the original value on the ground that they are not expenses properly chargeable to the current period and that depreciation charges eventually will dispose of them. This view, it would seem, loses sight of the fact that assets are thereby unduly inflated. Depreciation has to do with actual shrinkage. To avoid a large expense in one period, a deferred or suspense account to be gradually written off should be charged with those erection costs.

Rates of Depreciation

The following rates of depreciation are taken from "Principles of Industrial Organization" by Kimball, who is regarded as an authority among accountants:—

	Probable Life of Asset in years	Ratio of Scrap to original value	Percentage on original cost	Percentage on diminishing value
Brick or steel frame buildings easy service	40	0.10	2.25	5.5
Brick or steel frame buildings severe service	20	0.10	4.5	11.
Good wooden buildings, easy service	30	0.10	3.	7.5
Good wooden buildings, severe service	15	0.10	6.	14.
Steam engines	15 to 30	0.10	6 to 3	14 to 7.5
Steam boilers	15 to 30	0.10	6 to 3	14 to 7.5
Boiler room feed pumps	20	0.05	4.75	14.
Engine room instruments and gauges	10	0.05	9.5	26.
Steam piping, valves and fittings	10 to 15	0.05	9.5 to 6.3	26 to 18
Portable engines and boilers	10	0.05	9.5	26.
Gas engines	10 to 15	0.05	9.5 to 6.3	26 to 18
Electric generators	20 to 30	0.10	4.5 to 3	11 to 7.5
Electric motors	20	0.10	4.5	11.
Storage batteries	10	0.05	9.5	26.
Switchboard and instruments	15	0.05	6.3	18.
Heavy machine tools	25	0.10	3.6	9.
Light machine tools	15 to 20	0.10	6 to 4.5	14 to 11
Shafting, hangers, pulleys	20 to 30	0.05	4.75 to 3	14 to 9
Belting	10 to 25	——	10 to 4.0	——

The amounts set aside for depreciation should, then, be distributed against production, credited in some manner to the equipment accounts and debited to the depreciation accounts. The exact method of handling depreciation reserve is a problem for the accountant and financier. Sometimes it is actually put at interest outside the business and often, on the other hand, it is retained as working capital.

The Dangerous Set Screw

By M. N. W.

An old-style square head projecting set screw always jerks my heart to my mouth for I remember when long ago my clothing was caught by one of these deadly agents while starting a mill engine one very cold morning. The engine shaft, which was 4 inches in diameter and about 3 feet above the mill floor, had on it a small 8 x 2 in. pulley driving a counter-shaft just above it, this counter-shaft driving the engine governor. The belt from the engine shaft to the counter came off in starting, allowing the engine to run slowly. When I stepped around the engine flywheel and had reached up to put the small belt on, the set screw by which the small pulley was

keyed to the shaft, caught the lining of my coat. Just in front of me was one of the main posts of the mill which I instantly grasped at the first tug, bracing myself for the struggle. While my clothing gradually wound around the engine shaft and the pull was terrific, I was fortunately able to resist sufficiently to save myself from being crushed and the slight damage I experienced soon healed itself. Since then I have been a strong advocate of safety first methods, and in all plants in which I have been employed, have insisted that no projecting set screws be allowed. Notwithstanding the efforts of compensation boards and factory inspectors, projecting set screws are evident in, at least, a large number of plants running to-day and quite frequently we read of workmen who have been caught and crushed to death as a result of these devices.

Therefore, I suggest that a sharp lookout be kept for projecting screws. Insist on their replacement by the safety flush set screws which are now on the market. Undoubtedly forethought along this line will save many a life.

What Causes Glue Joints to Open Up?

Tests Carried out at the University of Toronto Indicate the Effect of the Time of Clamping and the Smoothness of the Surfaces—Type of Dowel not as Important as Alignment of Dowel Holes

By A. R. Duff

The partial or total failure of glue joints in furniture is the occasional experience of all furniture manufacturers. It may result from:

1. Unevenly or improperly dried wood;
2. Weak glue caused by over-heating or too frequent reheating in the pot;
3. Poor quality of glue;
4. Wrong type of dowel;
5. Faulty technique in assembling;
6. Carelessness in handling in the factory or while enroute to the consumer.

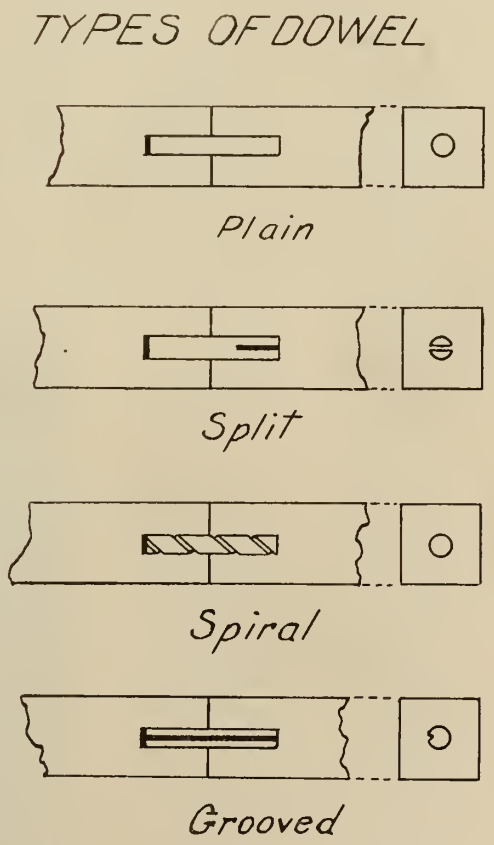
In the particular factory in connection with which the investigation to be described below was conducted, the glue was freshly made each day and was not overheated. The types of dowel in use were plain, spiral cut and either of these with one or both ends split. Dowels were driven tight or medium tight. The merits and demerits claimed for each type are as follows:

The Plain Dowel. The plain tight dowel ensures a perfect contact between itself and the wall of the hole into which it is driven just as though the surfaces were held together by a clamp. Against this it is claimed by some that the dowel when driven into a hole coated with glue, acts as a tightly fitting piston and shoves the glue ahead of itself leaving practically no glue on the two surfaces left finally in contact. It is also maintained that a dowel originally tight, will absorb water from the glue and will swell in consequence, thus expanding the hole. Subsequent drying and shrinkage of the dowel will result in a loosely fitting joint. It was observed that end grain pieces often split when very tight dowels are driven into them.

The Split Dowel. It is contended that the split or saw cut relieves the pressure at the end of the dowel by permitting excess glue to flow into the cut. The cut also facilitates the insertion of the dowel in the hole. On the contrary it is a source of weakness.

The Spiral Cut Dowel. The spiral groove, it is maintained, permits the glue to flow thereby releasing the pressure at the end of the dowel. Obviously a slight reduction in the area of contact between the dowel and the hole results. It would seem as though a plain dowel with a straight groove would possess all the advantages of the spiral cut dowel. It permits excess glue and compressed air to escape and gives a large area of contact. Types of dowel are shown in Figure 1.

The investigation was made to determine if possible the effect of type of dowel, its relation to the surface to be glued and the treatment of the article subsequent to gluing on the strength of the joint. Since end grain joints are weaker than side grain



joints, the former were used in all test specimens. These specimens were 1¾ in. by 1¾ in. and about 18 in. long. The joint was square with the axis of the specimen, was about midway of its length and, except in one instance, was doweled and glued. The dowels were seven-sixteenths inch in diameter. The

TABLE No. 1—DOWELS VARIED

No	Description	Strength in lb.	No	Description	Strength in lb.	No.	Description	Strength in lb.
1	Plain tight dowels. (Too	443	17	Plain cut plated; medium	1230	33	Spiral tight, whole split.	1264
2	tight to insert without	1372	18	tight.	228	34		1080
3	hammering.)	1751	19		1076	35		622
4		1578	20		920	36		529
	Average	1567		Average	1075		Average	988
5	Plain tight; half split.	816	21	Plain cut plated; loose.	1080	37	Spiral pinch plated; medium	1250
6		1414	22		1110	38	tight	1230
7		927	23		1120	39		651
8		1292	24		620	40		1260
	Average	1343		Average	1000		Average	1098
9	Plain tight; whole split	1196	25	Spiral tight	1170	41	Spiral plate cut; medium	870
10		1410	26		1190	42	tight	740
11		610	27		1090	43		670
12		1392	28		1420	44		1020
	Average	1336		Average	1217		Average	825
13	Plain pinch plated; medium	1170	29	Spiral tight; half split	1410	45	Spiral, quite loose.	1170
14	tight.	1310	30		1060	46		780
15		1038	31		1050	47		504
16		1026	32		1090	48		1440
	Average	1136		Average	1152		Average	974
						49	No dowel	2120

TABLE No. 2—TIME IN CLAMPS VARIED

No.	Wood Species	Dowel Used	Time in Clamps	Breaking Load	Remarks
13	Maple	Plain tight	10 secs.	660	Dowel broke when assembling.
18	Maple			1470	Dowel scarcely injured.
14	Birch			1430	Surface of hole partly adhered to dowel.
15	Birch	Spiral tight	10 secs.	1490	
17	Maple			1000	
20	Birch			1200	
19	Birch	Plain tight	15 mins.	2140	
21	Maple			3000	
22	Birch			1900	Joint failed. Dowel held glue and broke.
16	Birch	Spiral tight	15 mins.	3200	Dowel partly sheared off.
23	Maple			3370	" " " "
26	Maple			5200	" " "
27	Maple			3000	" " " "
28	Maple	Plain grooved	15 mins.	3540	Dowel partly sheared off
29	Maple			2500	" " " "
30	Maple	Plain grooved	15 hours.	4200	Dowel broke.
31	Maple			2760	Dowel partly sheared off.
21	Birch	Spiral tight	15 mins.	3000	Surfaces smoothed on trimmer
24	Maple	grooved		6300	
25	Maple			2784	Part of dowel surface sheared off.
1	Birch	None	15 mins.	5220	
5	Birch			4300	
8	Birch			3700	Not broken, sheared off at hole; cross grained
9	Maple			5500	
2	Birch	None	15 mins.	6000	Surfaces smoothed on trimmer.
4	Birch			6000	Sheared at hole, not broken
3	Maple			4400	Trimmed and sanded
6	Maple			4000	Trimmed and sanded.
10	Birch	None	1 hr	5660	Cut on trimmer
12	Maple			4100	
7	Birch	None	6 hrs.	3000	Cut on trimmer
11	Maple			5650	

strengths were determined in the Strength of Materials Laboratory, University of Toronto. Figure 2 shows the method of testing.

Assembly and Testing Methods

The procedure in assembling test pieces was the same as in regular commercial practice. One section was put in the vise and the hole glued, after which the dowel was driven in and home. The other section, hole and face, was then glued, placed on the first section and hammered home. The assembled piece was then placed endwise in a screw press and subjected to pressure to remove excess glue and to bring the glued faces into perfect contact. Within ten seconds the pressure was released and the sample allowed to stand on end for twenty-four hours to permit the glue to harden. All samples were tested at the age of seven days. The testing equipment was arranged to apply a straight rather than an eccentric pull to the specimens.

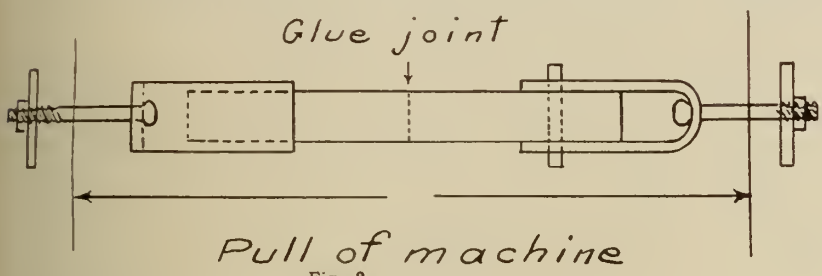


Fig. 2

An examination of the specimens after testing showed that there was no glue apparent in the grooves of the spiral dowels and that all dowels were slightly conical after being pulled out. Strengths varied from 600 lb. to 1,750 lb., the best results having been obtained from plain tight dowels. The sample with no dowel at all developed a strength of 2,120 lbs. This sample, however, was kept in the press for ten minutes.

It doubtless sometimes happens that on release of pressure after a few seconds' contact the glued faces come out of the close contact produced by the press. If, for example, the dowel holes are not in alignment when the surfaces are in contact or the surfaces are not in contact when the dowel holes are in alignment, pressure results in a bending of the dowel. When pressure is released the tendency of the dowel to straighten results in a separation of the glued surfaces. Five or ten seconds in the press is apparently an insufficient time under such circumstances. Several manufacturers were interviewed and the consensus of opinion was that for the most satisfactory work, clamps should be on at least 15 minutes and preferably two or three hours.

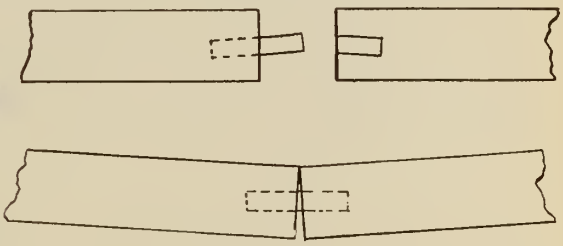
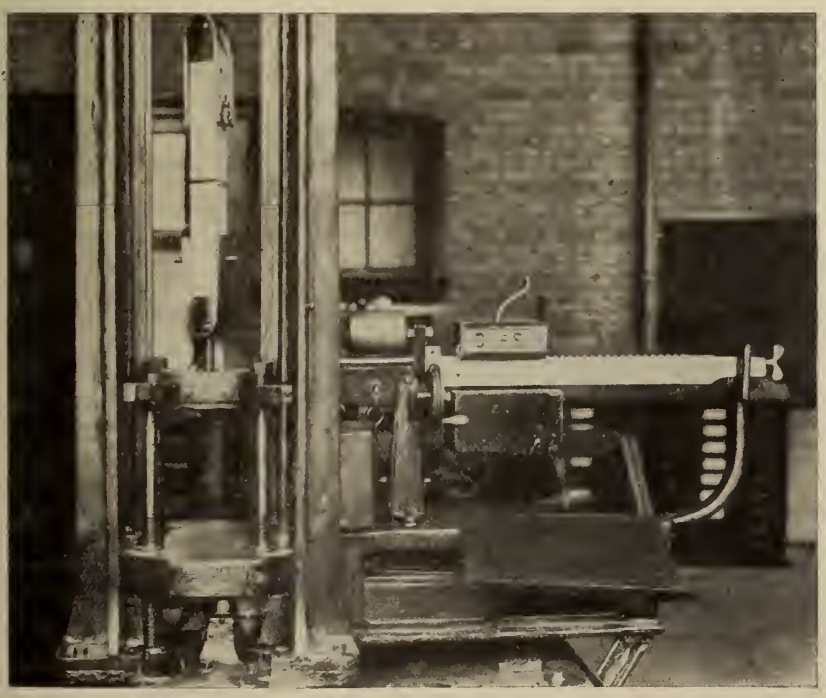


Fig. 3

It was also observed that in assembling chairs of a parlour suite, clamps were usually on for only a few seconds and seldom for more than five minutes. Following this, the freshly glued articles were rather roughly handled, resulting probably in the separation of glued faces which later gave trouble to the manufacturer.

Lack of Alignment Causes Trouble

In order to confirm the above assumptions further samples were secured from the factory, and these were assembled in the University carpenter shop, using glue supplied by the factory. In an attempt to get perfectly smooth faces on the joints some of the samples were cut on a trimmer at the mill of John B. Smith & Sons, Strachan Avenue, Toronto. It is



Test Specimen in Testing Machine

very difficult to secure a very smooth end at right angles to the sides of the sample. One or two samples were sanded as well as trimmed.

It was noted while assembling the samples which were drilled for dowels that the holes were not parallel to the four sides of the sample, so that after assembling and before clamping, the longitudinal edges of both sections of the sample were not in alignment, i.e., it required the force of the clamp to bend the dowel and straighten out the sample. In one case the two ends were so far out of alignment that the dowel broke when the clamp was tightened. If the clamps be immediately released, the dowel will reassert itself sufficiently to throw the glued surfaces out of contact, thus breaking the perfect contact so necessary for a strong glue joint. This is shown in Figure 3. The results of the strength tests are shown in Table No. 2.

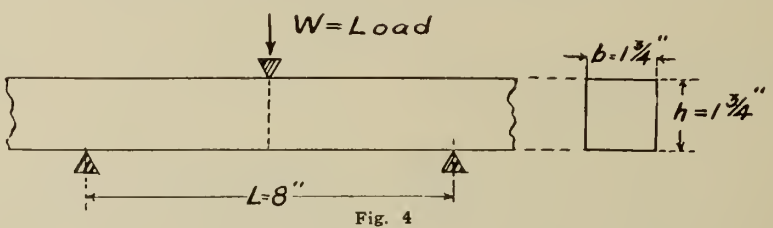


Fig. 4

An analysis of the results obtained very definitely indicates that weak glue joints are almost certain to result from too brief a time in the press or clamps. Fifteen minutes in the clamps gives as much strength as one hour or more. The greatest strength was obtained from the samples that were smoothed on the trimmer. Some of these tested to more than a ton to the square inch.

The weakest fifteen-minute specimen tested 1,900 lb.

The strongest ten-second specimen tested 1,750 lb.

The average strength of 54 ten-second specimens was 1,234 lb.

The average strength of 20 fifteen-minute specimens was 4,400 lb.

Three of fifteen-minute samples had such strong glue joints that the ends of the samples broke before the glue gave way. These samples were afterwards tested in cross-bending as shown in Figure 4. The modulus of rupture computed from the test is obtained from the formula

$$M = 3/2 \frac{WL}{bh^2}$$

where W is centre load,
L is span
b is breadth of section and
h is height of section

The results are shown in Table No. 3. The modulus of rupture for solid birch is about 12,000 lb. per sq. in.

Table No. 3

No.	Species	Dowel	Clamps	Load	sq in.
8	Birch	None	15 min.	1070	2400
2	Birch	None	15 min.	1350	3030
4	Birch	None	15 min.	1700	3820

Conclusions

(1) The type of dowel is not nearly so important as the smoothness of the surfaces to be glued, and the alignment of the dowel holes.

(2) If the surfaces to be glued are in perfect contact when the dowel holes are in perfect alignment, the dowel is a possible source of strength. Otherwise it is a source of weakness.

(3) The smoother the surfaces, the more perfect will be the contact.

(4) The more perfect the contact of the two joint surfaces, as the glue hardens and sets, the greater will be the strength of the joint.

(5) To insure strong glue joints the clamps should be on at least 10 minutes, and the article should be very carefully handled for at least 24 hours after assembling. Anything that spoils the contact given by the press will decrease the strength of the joint.

(6) If the maximum strengths reported above are attainable by one not skilled in the technique of the workshop, it should not be difficult to obtain equal strengths under manufacturing conditions. With such strengths, there is little probability that joints will loosen or open up.

Estimator's Clubs

Chicago, June 14, 1923.

Editor, Canadian Woodworker:

One of the resolutions of our Ninth Annual Convention provided that the Bureau exercise greater effort to encourage and promote estimators' clubs throughout the entire industry.

Two new clubs have now been organized—one at Baltimore, Md., and the other at Nashville, Tenn. The writer attended the organization meetings and at the same time conducted classes in estimating. The class-work consisted of lectures and blackboard demonstrations involving quantity survey and estimating from Cost Book "A." Only one kind of work was discussed at a time, after which the attending estimators were required to figure certain test problems. That procedure afforded an opportunity to dispel any misunderstanding on the part of the estimators, since, if errors occurred, they were immediately pointed out and corrected.

The Baltimore classes occurred on the afternoon of Thursday May 31, and the evening of Friday June 1. The Nashville classes occurred on Thursday and Friday, June 7 and 8. There were two sessions on Thursday—one during the afternoon and one in the evening—and another session Friday afternoon.

Both clubs will hold meetings regularly and will use for their basis of study our weekly Cost Exhibits and the Estimators' Correspondence Course. The Nashville club will meet on Thursday evening of each week, but the Baltimore club has not yet decided how often its meetings will occur. The Bureau now has eight members in Baltimore and seven in Nashville.

Yours very truly,
H. T. Didesch,
Millwork Cost Bureau.

How Can Better Millwork be Obtained?

What the Architect Can Do

Architectural Shortcomings Prevent Full Appreciation of the Value and Importance of Millwork—Prevalence of Distrust Leads to Unfair Practices—Millman is Often Left in the Dark

By J. P. Larson*

Architects and millmen ought to be the best of friends. The end and object of their work, to be successful, must be the same. It is for the architect to design and plan and for the millman to execute. Between them there must be co-operation instead of antagonism; but there must be more than co-operation, even. It is necessary not only to work together but they must work individually, as well, towards the end that results may be attained and that the executed piece of work represents the best of its kind according to the intent and purpose of the plans and specifications. It matters not whether it is a very elaborate and costly piece of work or a very simple and inexpensive piece of work, either as to design, workmanship, or material, but it must represent the ultimate in its class in order to be satisfactory

The first failure in the architect's duty towards the millman, I would consider to be his neglect in failing to properly define millwork. What we call millwork is referred to by some architects by that name; by some as joinery, and by still others as carpentry. But by whatever name, it has a different meaning to different architects, and in different localities. In some cases specifications are written with a separate heading for that part of the work known as millwork or joinery. In other cases it is combined in the general section covering carpentry. And carpentry again is usually intended to cover all of the wood construction in a building, whether framing, flooring, millwork, stair work, or cabinet work. Then, too, there is no clear line of demarcation in the minds of architects between the different kinds of wood-work. It will thus be seen that from the very start confusion is bound to result. The best that has thus far been done is for the millman, stair man, cabinet man, etc., to themselves define what they consider their work to be and bid accordingly. But this definition very often does not meet with the approval of the architect, who perhaps interprets millwork entirely differently than does the millman. Concerning this matter, the St. Louis millmen have for many years defined millwork in their bid proposal upon which their contracts are based. Through long usage, the architects, contractors, and others interested have become accustomed to the proposal form in question and little trouble experienced. But to such mills as do not use this form, and when bids are submitted in other markets throughout the country, there is great confusion and hardly in any case is a bid for the millwork based on the same thing. Some make it a rule on an itemized list of quantities; others make what is known as a blanket bid which is intended to cover all of the millwork. When the blanket form is used sometimes certain things may be specificially either included or excluded, so that it will be seen what a tremendous opportunity is here presented at the very outset for contractors and others to "play horse" with the millmen. The temptation is strong, even on the part of honest contractors, to select a bid of maximum quantity and attempt to buy it at the minimum price. And it requires no great stretch of imagination to understand what can be done by dishonest and unscrupulous contractors, under the circumstances pointed out.

Making Their Own Definitions

It would seem that here is a work that ought to be undertaken by the architect. Other branches of building construction are pretty thoroughly defined and understood. Why should not the same thing be true of millwork? Why should each architect for himself determine what millwork is, and why should millwork be understood to be one thing in one section of the country and another in another section? There can be no division of opinion as to the desirability of having an authoritative definition of what millwork is. The architect usually reserves to himself the sole interpretation of the plans and specifications. This being so, he should certainly set out clearly what work belongs to the different crafts. But he should go further than that; he should establish this not along special but general lines. If this matter was taken up by the architectural associations, and definitions and rules laid down by it, clearly stating where millwork begins and ends, there is no doubt but that this if itself would be of inestimable value not only to the millman but to the architect, contractor, and owner. It would at one stroke settle many of the difficulties of the millman and it would relieve the architect and contractor of doubt, and save the owner, in many cases, much money by preventing duplication and over-lapping on the part of the different crafts. There cannot logically be anyone other than the architects to undertake this elementary work. They are the beginning and the end of the technical part of every building project. It is for them to say what is and what is not to be. Only through some national body, it seems to me, can a satisfactory solution of this matter come about. That the millmen ought to be consulted and their help and co-operation obtained in connection with their part of the work, goes without saying.

Incomplete Plans are Frequent

The millman, in order that he may know what he is expected to furnish in the way of millwork to any particular job in the matter of quantities and to correctly price these quantities so that an intelligent bid may result, must have complete plans and specification covering the work in question. To furnish comlete plans and drawings illustrating the work is clearly the duty of the architect. That he fails miserably, very often, in this respect is well known. Plans

*Secretary, St. Louis Millmen's Association, St. Louis, Mo., before the Millwork Cost Bureau.

are often put on the market which are so indefinite that no one can intelligently estimate either the quantities or price. We cannot here excuse the reasons compelling the architect for putting out incomplete plans. Everybody who is asked to submit a bid on any part of the material or workmanship entering into a proposed building is entitled to full information as to what is wanted and expected. I am not now speaking of cases where preliminary plans are put out clearly stating that their purpose is only to secure an approximation of the cost of the contemplated structure.

Not only should the plans be complete but, if the work is to be executed according to details by the architect to be furnished later, scale drawings of sufficient size should accompany the plans, showing design and section so that the proper quantities in the way of materials and the set-ups required to execute the design may be covered. This point is of more importance in millwork than in most of the other branches, for the reason that the millwork, as a rule, depends entirely upon the future ideas of the architect and must be wrought accordingly, while in other branches such as steel, stone, brick, etc., the construction is practically left to the contractor himself in these lines. There is no other branch in building construction that is so scantily covered in the plans and of which so much is expected in the execution, as millwork. Every millman knows of scores of instances, to his sorrow, where nothing unusual was indicated on the plans, which probably were drawn to a very small scale, and then later, after securing the contract, elaborate details, involving material much greater in thickness than usual for similar work, was expected by the architect. Some architects are not even honest in this connection. Of many such instances in my experience, I will mention only one. An architect of high standing in his city, and who prided himself on his standing, when asked by me at the time of figuring a certain job which was drawn to a ⅛-inch scale and was particularly heavy in the outside millwork such as cornices, brackets, pediments etc., why he did not show a section of the various kinds of work sufficient to indicate what was required, as it was impossible for anyone to know what he might later want, frankly, I might say brazenly, stated that his reason was, that if he did show what was wanted it was his experience that the bids for the millwork would invariably be higher. Comment on a statement like this is, of course, wholly unnecessary.

Time is too limited to relate other experiences which are too numerous to mention. However, every millman will testify to the fact that in entirely too many cases plans are drawn to too small a scale to give an adequate conception of the nature of the work and how it should be constructed. Specifications are too vague and indefinite to throw any light on the subject. And yet bids are asked for on such plans and specifications for work to be executed perhaps a year or more in the future. The architect's idea as to details and construction, if he had any at the time the bids were asked for, may have changed entirely before working drawings are made. And yet he expects the millman to go with him in his wildest dreams of fancy without complaint. If, perchance, a millman should be found bold enough to demur, he will be told that the bids were asked for on the basis that the work was to be executed in accordance with plans and specifications and "future details," and that the architect is the sole author and interpreter of all these. In this statement he is probably correct. It is rare indeed when a millman refuses to agree to anything and everything in order to secure a contract. He is the most soulful creature in the world. He usually signs away his soul on every job.

Architect Not Alone at Fault

In justice to the architect it must, of course, be admitted that he is not alone in wrong-doing or that his shortcomings are more glaring than those of others. That the millman is often to blame is not to be denied. He is not always free from guilt. Injustice by one side leads to injustice by the other side. The millman may attempt substitution of materials; he may fake on the construction; inferior workmanship may be used; certain items may be intentionally withheld with the claim that they were not in his contract; he may attempt to cut the quality and to reduce the materials, claiming that different stock and smaller sections will answer just as well. But to all these attempts, demand, or urgings, the architect must set his face hard. If he clearly shows and specifies what is wanted he should insist on his pound of flesh "as nominated in the bond." To yield on any of these points is a fraud on the conscientious competitor who in good faith intended to carry out both the letter and the spirit of the undertaking. The millman should not be permitted to "get by" with any of that stuff nor to be let off with a 75 per cent. performance when 100 per cent. was intended. The architect must be held accountable for and to see to it that justice betwen competitors is maintained. And be it remembered, that the main work of justice is its equal distribution of advantage and its insistence that each individual is entitled to neither more nor less than the other fellow concerned.

It is because of the injustice on the one hand by the architect and contractor, and on the other hand by the millman that distrust and suspicion arise between them. The architect in most cases believes that the millman is attempting to get by with less than is called for in the plans and specifications. And the millman believes equally that the architect insists on having something that he is not entitled to and which has not been indicated, or even contemplated, in the drawings and specifications. With conditions like these existing both parties consider themselves justified in fudging. They work on the theory that everything is fair in love and war; that to do to the other fellow what you think he will do to you is perfectly proper and that to do it first is the only safe plan.

Specifications Are Weak

One of the weaknesses of the architects, it has always seemed to me, is their specifications. Seldom does it appear that they have a clear conception of what they want in connection with the millwork. This is usually true both as regards material and construction. Judging from the majority of architects' specifications, an architect's conception of the millwork is too often hazy and nebulous at the time of drawing the plans, it would seem that the duty of writing the specifications in most cases is delegated to someone in the office who may be and usually is a bright and clever chap, so far as design and generalities go, but who lacks both training and experience in detail and

(Continued on page 74)

Trade Opportunities in the Old Country

Reports to the Department of Trade and Commerce Indicate That New Markets are Available for Canadian Manufacturers Provided They Study the Requirements

Birch and maple dowels are lines that are freely imported into the Liverpool and North of England district, where they are extensively used in cabinet and furniture making, and in other manufactures. Maple dowels are in considerable demand, but those made of birch are most highly appreciated. This is a line of woodenware in which Swedish competition is not an important factor, and in which therefore Canadian manufacturers have an excellent opportunity of doing good business. It must be pointed out, however, that American dowels are strongly established on the market, and highly appreciated by the trade for quality and workmanship.

The diameters used are 3/16-inch, 1/4-inch, 5/16-inch, 3/8-inch, 7/16-inch, 1/2-inch, 9/16-inch, 5/8-inch, 11/16-inch, 3/4-inch, 7/8-inch and 1-inch, and the lengths are 12-inch, 16-inch, 18-inch, 24-inch, 30-inch, 36-inch, 42-inch, 48-inch, 54-inch, 60-inch, 66-inch and 72-inch. The most popular sizes are 1/4-inch and 5/16-inch diameters, in 24-inch, 30-inch and 36-inch lengths, and 3/8-inch, 7/16-inch, 1/2-inch and 5/8-inch diameters, in 30-inch, 36-inch and 42-inch and 48-inch lengths. The 1/4-inch and 5/16-inch diameters are usually packed in bundles of 200, and the 5/8-inch diameter in bundles of 100. The bundles should be firmly tied with strong string or light rope to prevent warping. Faulty packing is said to be responsible for considerable defect in this direction. The dowels should have clean-cut ends, and be free from knots and "flats."

The approximate values per 1,000 dowels c.i.f. Liverpool are as follows: 1/4-inch diameter, 12-inch, 7s. 6d.; 18-inch, 11s. 6d.; 24-inch, 15s.; 30-inch, 20s.; 36-inch, 24s.; 42-inch, 29s.; 48-inch, 33s.; 60-inch, 56s.; 1/2-inch diameter, 12-inch, 12s.; 18-inch, 18s.; 24-inch, 24s. 6d.; 30-inch, 34s.; 36-inch, 40s. 6d.; 42-inch, 48s.; 48-inch, 54s.; 60-inch, 91s. 6d.

Broom Handles

Before the war, the broom handle business was almost entirely in the hands of American and Canadian exporters, as values were sufficiently low to prove attractive to the consumer, while the quality and finish were admittedly superior. Under present price conditions, there is a tendency on the part of the consumer to put up with an article of lower quality which is obtainable at a lower figure. As a result, a considerable business in this line is going to Sweden, the best of whose product, while still admittedly inferior, and made of less satisfactory material, is quite passable in finish and workmanship The sizes most in demand are 48-inch by 5/16-inch, 48-inch by 1-inch, 50-inch by 1-inch, and 50-inch by 1-1/16-inch. Swedish quotations are said to be usually from 25 to 33 per cent. lower than those from transatlantic sources. An instance is given of Swedish brooms 48-inch by 1-inch, best quality, sanded, fairly free from knots and defects, offered at 17s. per gross, as against American quotations of 22s. 6d. c.i.f. Liverpool.

Tool Handles

Navvy pick, fawn foot felling axe, and sledge handles made of hickory are imported in the main from the United States. Attempts have been made to introduce maple handles from Canada, but dealers are pessimistic as to the possibility of selling these, claiming that they possess an undesirable lack of resiliency. As long as hickory is available, it has a strong preference. The best grade of handles, No. 1, all white perfect handles, is not in general demand on account of its cost. Considerable quantities of No. 2, a grade free from all defects; but inferior to No. 1, are regularly sold, but there is an even greater demand for the third or A grade, which, though it has slight defects, is quite serviceable for general use. Pick handles are called for in 36-inch, 39-inch and 42-inch lengths; fawn-foot axe handles should be 36-inch long, and hammer handles are in request in various lengths, increasing by 2 inches from 12-inch to 30-inch. Navvy pick handles, No. 2, 36-inch, are worth 12s. 6d. per dozen, and axe handles, 36-inch long, 9s. 6d. per dozen, c.i.f. Liverpool.

Agricultural tool handles, hay forks, rakes and shovel handles of ash and ash stems are largely imported. Hay forks and rakes should be 4 feet, 4-1/2 feet, 5 feet, 6 feet, or 8 feet in length, and have diameters of 1-3/8 inch and 1-1/4 inch. Shovel handles are 4 feet, 4-1/2 feet, 5 feet and 6 feet in length, with a diameter of 1-5/8 inch, and ash stems 28-inch, 30-inch and 32-inch long with diameters of 1-1/2 inch and 1-9/16 inch.

Fir Doors for Belgium

A recent report from Brussels to the Department of Trade and Commerce by Trade Commissioner A. S. Bleakney stated:

Following an inquiry received from Victoria asking if there is a possibility of doing business in this country for good-class fir doors and submitting prices, the illustrations and prices were placed in the hands of a firm in Brussels doing a large business in these doors received from the States of Washington on the Pacific Coast. It has been ascertained that the Canadian prices were approximately the same as the prices of American doors delivered to the users in Belgium in lots of twenty. The firm in question interviewed stated that if Canadian doors could compete in price with those from the United States a considerable business could be done. This one concern was selling $10,000 worth of these doors monthly. Arrangements were made by this firm with a local contractor to build the frames and architraves for the doors of suitable material. The American doors in question are made of Oregon pine and selling points advanced in their favour here are as follows:—

(1) The doors are scientifically dried and are guaranteed not to warp, bend or open at the joints, even in cases of extreme dampness.

(2) They are totally free from knots.

(3) All the panels are made of three-ply with the grains opposed, to a thickness of 8 millimetres, are of a single piece, finished on both sides, and features are made of the beauty of the grain and strength.

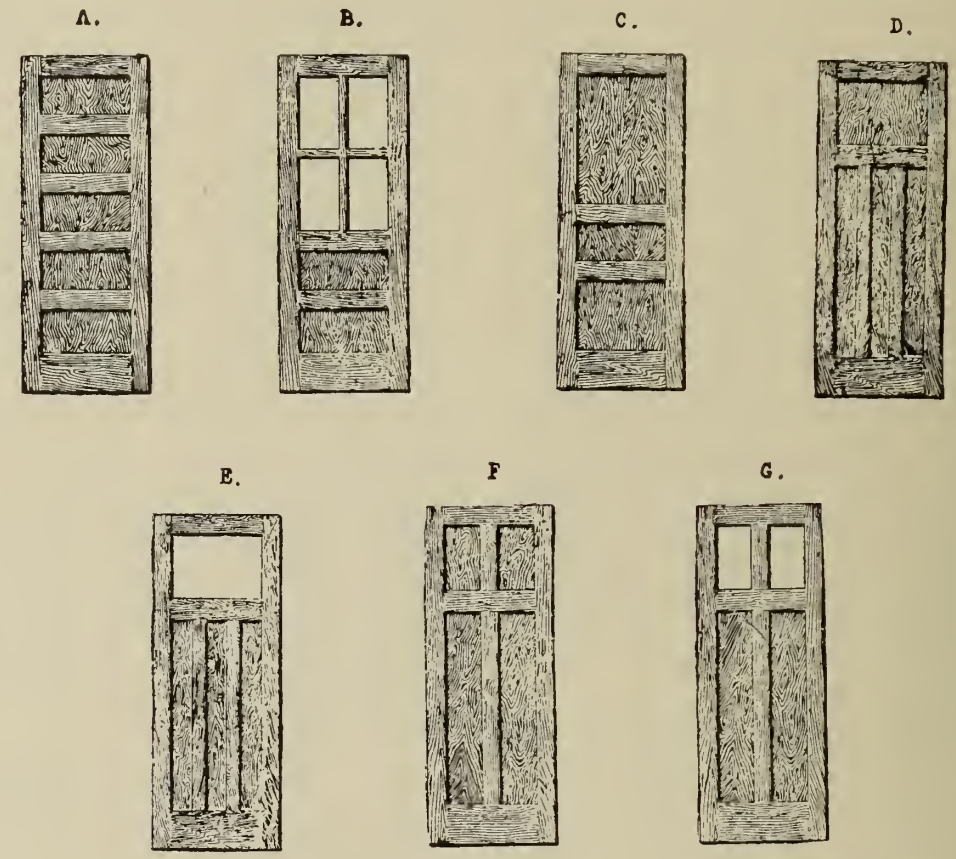
(4) Patented assembling of the doors by dowels is also a feature.

Illustrations of the several types of doors are shown below. Prices, as sold to the users, in lots of twenty, are also shown (prices in francs, dimensions in metres). For orders of less than twenty an extra charge of two francs per door is made.

United States firms are shipping these doors c.i.f. Antwerp, cash against documents. Importers in Belgium make immediate deliveries from stock to their customers and receive payment cash against receipt of merchandise.

There is also a certain business to be done in window frames of the same material and the same standard construction.

Firms interested should refer to Trade Inquiry No. 1639 appearing in this number on another page. Inquirers should send prices, etc., to the firm in question. If possible, manufacturers of the doors themselves should write, giving their lowest prices, in order to offer effective competition.



Dimensions in Metres	A Fr	B Fr	C Fr	D Fr	E Fr	F Fr	G Fr
2 03×0.81×6/4	68	67	68	72	72	70	70
1.93×0.71×5/4	65	65	66	70	70	68	68
1 83×0 61×5/4,	63	63	64	68	68	66	66

Types of fir doors wanted in Belgium

New Executive for Perkins Glue Co.

The Perkins Glue Company announced on June first that Edward F. Gould of Chicago had on that day associated himself with the Perkins Glue Company in the capacity of secretary and assistant general manager.

While Mr. Gould is not greatly known in the woodworking field, his training and experience amply fit him for his new work. He graduated from Worcester Polytechnic Institute, Worcester, Mass., in 1899, as mechanical and electrical engineer and has had a wide experience on these lines in business and as a consulting engineer. For the present, at least, Mr. Gould will make his headquarters at the general offices in Lansdale, Pa.

Under the new arrangement the officers of the company are:

J. B. B. Stryker, president and general manager; G. S. Perkins, vice-president in charge of sales; J. G. B. Perkins, vice-president in charge of production; E. F. Gould, secretary and assistant general manager, and E. L. Gilbert, treasurer.

The D. McKenzie Machinery Co., of Guelph, Ont., have the contract for supplying the metal-working machinery in the new Riverdale Technical School, Toronto. The woodworking machinery is being supplied by both the Canada Machinery Corporation, Galt, Ont., and the Preston Woodworking Machinery Co., Preston, Ont. All thees machines, it is understood, are to be driven by individual motors. The Canada Machinery Corporation's contract includes twelve manual ball bearing wood lathes, a ball bearing jointer, three variety saws, cut-off saws and two hollow chisel mortisers.

Much Thought Given to Wired Furniture

A Large Market is Offered for the Sale of Electrically Fitted Dining Room and Bedroom Suites—New Fittings Have Been Developed—Specifications for Wiring

That electrically wired furniture has a definite field of usefulness is the contention of a committee which presented a report on the subject at a meeting, a few days ago, of the National Electric Light Association. In view of the possible market which is thus offered, this report is of considerable interest and is printed below for the guidance of any furniture makers concerned.

All electrical appliances have one inherent and unescapable characteristic—their need to be attached to an electric outlet while in use. In order to insure their popularity and habitual use, it is essential that convenience outlets be not only available, but accessible to the particular place at which it is desired to use them.

The inadequacy of convenience outlet provision in the average apartment and home has become very much apparent with the ever-increasing sale of electrical appliances and the public's favor toward these indispensable modern household aids. More convenience outlets are needed in the homes of virtually every section of the country. In many communities the central stations are campaigning the thought of more convenience outlets with comprehensive advertising and solicitation. In others, little is being done and an already regrettable situation embracing the known and acknowledged inadequacy of convenience outlets is dragging on as the months go by.

The advocacy of electrically equipped furniture, while it may not be the solution of the problem, will do much, in the opinion of this committee, to relieve the present situation and to relieve it speedily. The public, it is felt, can be induced to wire furniture if the desirability and the benefits, the convenience and the utility of the innovation are explained so that they will be understood. It is simpler and less costly to wire a piece of furniture for convenience outlets than it is to re-wire the home, and it entails far less inconvenience. Furthermore, the lessee population of our cities are more apt to spend their money to modernize their own furniture belongings than they are to improve the home in which their interest extends only over the period of their tenancy.

New Outlet Fittings

Considerable strides have been made during the past year in the perfection of outlet fittings that simplify the electrical equipping of existing furniture. No longer is there any need of cutting and actually wiring furniture for electrical adaptation if this is objectionable to the owner. Attachable fittings that serve practically the same purpose may be bought at any local electrical contractor-dealer and made ready for convenient use in a few moments' time. One such fitting, now on the market, is manufactured by Harvey-Hubbell, Inc. of Bridgeport, Conn., and is known as the "Triplex Table Tap." The manufacturer claims, and rightly so, that with this device it is possible for any householder to wire his own furniture in a few minutes time. It consists of a block of strong black fireproof composition, measuring 7½ in. long by 2 in. wide by 1 in. high, and carries three beveled T-E slot outlets arranged in multiple with eight feet of silk-covered cord and a separable attachment plug which fits any lamp socket or convenience outlet. It may be fastened to the underside of a table top or on the underside of the protruding lips of sideboards and serving tables, by means of two screws through a counter sunk pole at each end, or it may be used as a portable outlet, on the tea wagon or wherever a convenient T-E slot electrical connection may be required.

The General Electric Company has also developed, in model form, a three outlet device with detachable plug lead for attachment to furniture by means of angle pieces. Other fittings for electrically equipped furniture are being developed in model form by the same company. One of these is intended for attachment to existing beds and will combine a night lamp, controlled by a switch that can be operated comfortably while lying in bed, with a convenience outlet for heating pad or reading lamp use. Another fitting that is in the development stage is a very compact convenience outlet that may be inserted in existing furniture without requiring a large, and in some cases, objectionable incision and brass plate.

Other manufacturers are developing and considering the manufacture of fittings appropriate for furniture use. The unlimited possibilities of the market has encouraged many, and it is hoped that fittings for furniture use may be a widely distributed as are other everyday electrical necessities within the coming year.

The electrically equipping of tea wagons seems to continue to overshadow the electrically equipping of all other furniture by furniture manufacturers. The Nichols Electric Furniture Company at Bennington, Vt., have produced a "Lady Maid," which the committee has been advised, has found a very ready sale to the public. A night table known as "Electric Susan" has in the past year been placed on the market by the C. B. Worthen Company of Cleveland, Ohio, and is intended to bring the convenience outlet to the intending user instead of him having to go around in search of it. The manufacturers advocate the use of "Electric Susan" as a night table, for reading lamp, fan or heater, milk warmer, heating pad or any other electrical appliance that might be found useful in the bedroom, and as a general utility table in milady's boudoir for the uses of the curling iron, hair dryer, fan, etc. As a supplementary cooking and serving table in the dining room, "Electric Susan" serves many practical purposes for the use of electrical appliances in the preparation of meals.

Other items of electrically equipped furniture that have been manufactured in number and catalogued for sale to the retail furniture trade are, spinet desks by the William F. Drueke Company of Grand Rapids, Mich., vanity tables by the Wallace Manufacturing Company, Grand Rapids, Mich., and suites by the Bagby Furniture Company, Baltimore, Md., and the Gibbard Furniture Company of Napanee, Ont.

Wider Publicity for Wired Furniture

The popularity of electrically equipped furniture depends largely upon the public interest that is

aroused for it. The committee has, during the past year, been able to secure a very large volume of publicity in furniture trade publications, in popular magazines, in select home furnishing magazines and on woman's pages in the newspapers. It does not feel, however, that this is sufficient to create the necessary desire that will result in a more general adaptation of this innovation in American homes. What is needed, is the interest and support of the entire industry. Manufacturers and central stations can assist materially by pictorially showing electrically equipped furniture instead of just ordinary furniture when the nature of their advertising requires furniture settings for appliances or other items. Contractor-dealers should familiarize themselves with the Committee's furniture wiring specifications and smplify these as much as local conditions warrant so as to be in a position to estimate and properly undertake furniture wiring jobs.

Retailers of electric appliances would do well to have their display tables electrically equipped to more conveniently and efficiently display and demonstrate their merchandise. Electric homes should be furnished with complete electrically equipped furniture suites and every effort made to have local furniture dealers display such suites in their stores.

The purchasing agents of all the companies represented in the industry can assist the endeavors of the committee by specifying electrically equipped furniture when making purchases of desks, tables, etc. This will create a demand for electrically equipped furniture and undoubtedly tend to make a large number of manufacturers consider its value, desirability and possibilities.

Specifications and Some of the Purposes for Wiring Furniture

Bed.—The bed is provided with three receptacles, placed under the left-side board at the head of the bed to connect a heat pad, the bedside lamp, the fan, the baby's bottle warmer or a grill for the bedside breakfast. In addition, a toggle switch operates a lamp beneath the bed, which illuminates the floor sufficiently to make it comfortable to walk about without disturbing a sleeper or making the interior of the room visible from out of the window. All this equipment is attached to the one section of the bedstead, so that the bed may be taken apart without interference with the wiring.

Chifferobe.—The chifferobe has two receptacles for the convenience of the man, and they are often needed when this piece of furniture accepts the darkest corner in deference to the greater needs of the dresser. They provide for the connection of a boudoir lamp or a shaving lamp, a fan or an electric clock, and the wardrobe section is automatically lighted as the doors are opened.

Dresser.—The dresser has four receptacles to connect two candlesticks or a boudoir lamp, a violet ray, or vibrator or hair dryer or curling-iron or fan.

Dining Table.—The dining table is undoubtedly the one article of furniture most greatly in need of its own wiring. Although it is usually not possible to operate more than one table appliance at a time, owing to the excessive load, as a matter of practice it is not necessary or customary. The percolator is started as soon as the first member of the family comes in to breakfast, or by the maid before that. By the time the fruit and cereal are finished, the coffee is done and the grill or toaster has come into service. So only one appliance is needed at a time, but to be convenient it should be possible to disconnect the one and connect the other without getting up, and this is rarely possible where the table itself is not wired.

Too often an indirect lighting fixture over the dining table makes it impossible to connect an appliance without running a tangled cord across the rug and risking an unwary foot that may jerk the toaster off the table; and the attachment of table appliances to any type of lighting fixture on the table is an abomination, because the hanging cords are both unsightly and troublesome. A wired table, however, may be connected to a floor receptacle through parted fibers in the rug, and the appliances, with shortened cords, are plugged into the receptacles in the skirt of the table. Meanwhile, the lighting arrangements are not disturbed.

Buffet.—The buffet is fitted with two receptacles which may be used for connecting electric candles or any cooking appliance which might be operated by the maid at the side board or at the table. Also in summer a fan often stands here.

Serving Table.—The serving table is equipped in the same way as the buffet as an alternative or supplementary convenience for attaching the same appliances or candles.

China Closet.—The china closet is wired to provide light with both an ornamental and a utilitarian purpose. Beautiful glass and china is most attractive when lighted, and low-powered tubular lamps within a cabinet bring out the fire of cut and iridescent glass and the coloring of china most effectively and without undue display. This light also serves to prevent breakage when the glass is being taken out or put back by making it easier to gage the space and distance. On top of the china closet there are also two receptacles to connect a fan or an electric clock.

Tea Wagon.—The tea wagon is another case where wiring has a great practical value. The wagon is taken about the house to any room or on the porch, to be used beside the fireplace or at the chair where the hostess may be sitting. On it may be a samovar or percolator and also a chafing dish, grill, toaster or waffle iron. Yet seldom is it convenient to connect two appliances and perhaps a little table lamp just at that point. With a wired tea wagon the attachment cord is carried to the nearest baseboard outlet and the appliances, with shortened cords, plug into the tea wagon's own two receptacles. A hook is provided to coil the wagon's attachment cord over when not connected.

Kitchen Table.—The kitchen table is the main domestic workbench, and more and more electrical equipment is becoming available for use on it. Two receptacles have been installed to connect the electric mixer, the grinder, the polisher, or the flat-iron.

Kitchen Cabinet.—The kitchen cabinet has two receptacles for connecting the same devices listed above for use on the table, and in addition a heating receptacle for attaching a flat-iorn or a fireless cooker.

To Manufacture Store Fittings

A. Danby, Hamilton, Ont., builder and contractor, has started a factory at 281 Main St. West, for the manufacture of store fittings and general woodwork. The factory is equipped with suitable machinery for this purpose.

Appearance Counts in Selling Wooden Boxes

Competition Demands That a Good Looking Package be Produced—This Calls for Better Planer Work in the Factory and Requires Up-to-Date Equipment and the Most Intelligent Operators

By Wisconsin

Box manufacturers seldom realize to what proportions the wooden box industry has grown in the last ten years. Wooden packages are utilized for a great variety of uses and go into every port of the world, oftentimes far into the interior of strange and uncivilized countries, as carriers of both odd and commonplace articles. In view of the great demand it is small wonder that some manufacturers have been inclined to sit back and view the future of the wooden box industry with complacency—a complacency which, to my mind, is resting upon a very insecure and fragile foundation.

Far-seeing manufacturers are inclined to view the matter in an entirely different light, fully grasping the true significance of the inroads made upon the industry by the paper box. The sales of the latter article total in the neighborhood of about 75 per cent. of the wooden package sales, but as a good many of the boxes manufactured are not in direct competition with the wooden, the percentage might be set at 45 per cent. as being representative of the relationship existing. The most alarming phase of the situation lies in the fact that the greatest inroads have been made within the last ten years.

With this condition existing, there seems a great work to be done to increase, in fact maintain, the superiority of the wooden product. This can be accomplished by the employment of more intense methods of exploitation. Co-operation from box associations, and advertising intelligently, seem to be the logical steps in emphasizing the superiority of the wooden box over the paper, in cases where the two are in direct competition. And the work need not be confined to these two methods entirely, as the individual manufacturer can assist a great deal through studying the uses for which the box is intended, and designing it for the most economical manufacture; he is also in position to improve the quality of work done on the box.

This latter factor, at first sight, seems to have small bearing on the increase of the world-wide sale of boxes, but there is no denying of the fact that the better appearance of any number of manufacturer's boxes would certainly react in creating greater favor among package buyers. The world has progressed in a number of things in the last ten or fifteen years, and among them we might point out the greatly improved methods of advertising and selling, as an example. From selling to box-factory planing may seem a far cry indeed, but when the influence of the work turned out by the machine is tied up with the effect produced on the ultimate purchaser, the subject seems a trifle more rational.

Appearance Counts

Briefly, the appearance of the package is exerting no small appeal in the selling of commodities. Growers of apples, prunes, oranges and other fruits have demonstrated this fact to their own satisfaction, and demand a good looking package for the effect that it will have on the buyer of the goods. They have found the appearance of good boxes to be advantageous in two principal ways—as an appeal to the purchaser through their neatness, or beauty, whichever you may prefer to term it, and as a means of carrying a forceful message to the customer. To do either, successfully, it is apparent that the boxes must be constructed of material that is smoothly and uniformly-finished.

Many box manufacturers are prone to emphasize the mechanical troubles and disregard the operator as a factor in producing smooth work. Carelessness of the man can ruin the appearance of more packages than any other single cause. Perhaps the greatest share of carelessness is due, to some extent at least, to the fact that only the poorest grade of lumber is employed for box construction. This is bound to lead to carelessness in handling which is not true where expensive stock is handled, as in the furniture industry and similar lines of manufacture. Instead of improving the appearance of the lumber, it is a human tendency to surface the stock only to that degree of fineness which will allow it to pass the eyes of the inspector. There is no question in my mind but what defects can be eliminated in the stock, so that the finished box has a nice, clean, uniform appearance; well-fitted, indeed, for carrying the advertisement or trademark of the packer, in such a way as to aid in the sale of the goods packed in it.

Without doubt, the two principal factors in box-factory work are smoothness and uniformity; both are necessary in giving a good surface. The manufacturers of printing machinery have long complained that one of the trying problems of their industry comes from the fact that, too often, the box stock coming from the planers will vary in thickness, which makes it difficult to do good printing. The box boards not only differ a little in thickness, as compared to each other, but some will be thick on one edge and thin on another; I have even seen cases where they are thicker in the body than on the ends, and vice versa. All these shortcomings make for poor printing, of course, and as a direct consequence every maker of box-printing machinery is persistently arguing for better planer work.

Causes of Unevenness

One has only to look at a few boxes to understand why some manufacturers are not making good. Box selling is built upon giving the customer an article which will prove satisfactory from every angle, and the manufacturer who does not recognize this fact is not only running his own head into a stone-way of opposition, but that of his brother manufacturers as well.

Some of the unevenness in planer work may be attributed to the fact that the stock that is dressed at different times will vary in thickness. When the knives are fresh and sharp and cutting well, the machine is set up to a given thickness. After considerable lumber is run they become dull and wear away, so that the stock becomes thicker than origin-

ally called for. Then the knives may be resharpened and given an entirely different setting. This, of course, can be traced to the carelessness of the operator in not watching his settings, but it should not be tolerated. The fact remains, however, that it has happened over and over in the past and continues to happen.

The necessity of modern, up-to-date planers for the box factory cannot be emphasized too much. The current opinion seems to be that any old kind of a surfacer is fitted for this work and that any old kind of knife-jointing or grinding will answer the purpose. The idea seems to be, in many cases, that quantity is all-important, quality a negligible factor.

If there is any single thing that the operator of a surfacer should be criticized for, it is turning out the poor face work which is so common. The importance of correct knife balancing, grinding and jointing has certainly been stressed sufficiently to insure every planer operator being familiar with the correct method of procedure. We should have a comparatively small amount of trouble from this defect, and then only on the poorest stock. Always remember that the jointer is intended only as a truing device and that a very light cut is sufficient to bring the knives into a perfect cutting circle.

When the finish is impaired in any way and the grain begins to raise, get the jointer into action at once; don't wait too long and risk the quality of the work. In this regard it is well to remember that careful, accurate grinding will eliminate a lot of trouble from excessive use of the jointer and consequent heavy heels on the knives.

The operator will avoid a great deal of difficulty if he makes it a point to keep all parts of the machine perfectly tight and in good working order. The careless adjusting of the knives to the bed plate will invariably result in making stock thicker on one edge than on the other. This makes good printing very difficult to attain, in fact practically an impossibility. Especially is this true if the stock is hard and unyielding. As a result of this kind of work, in order to make an impression, the type must imbed itself on one edge in order to make an almost indistinct impression on the other, thinner edge of the board.

Antiquated Practices Must be Eliminated

Giving the matter thorough consideration, it is my belief that box-factory planing work is far more exacting than that called for in furniture, cabinet and allied lines. Comparatively few of our manufacturers are equipped with the necessities for sanding or otherwise removing imperfections in the surface, and as a consequence the stock must be watched carefully if it is to meet the limits imposed by uniformity and good finish.

Like any other line of manufacturing, the box industry has a lot of antiquated practices which must be eliminated if its future is to be assured. It would seem that a good deal of intelligent endeavor could be expended at the machine end of the business, in an effort to increase the market for wooden boxes. Certainly, it is a matter which is worthy of more than a passing moment's consideration by the boxman who wants not only to expand his own business in the future, but increase the entire trade's output.—From The Woodworker, Indianapolis.

B. C. Woodworkers Organize

Planing Mill and Sash and Door Manufacturers Have Formed Association—Much Activity is Manifest

The planing mill and sash and door interests of Vancouver and vicinity have perfected a very excellent local organization for the benefit of the industry. The need was pressing, as the business had become demoralized, due to the lack of understanding between the various groups. There was formed, consequently, the British Columbia Woodworkers' Association, with E. C. Chrystal, of E. C. Chrystal Co. Ltd., as president; Robert D. Helmer, vice-president; M. T. Holman, of the Eburne Sash & Door Co., treasurer. The acting secretary is Mr. Gillespie. The association has a membership of 21 and is affiliated with the Victoria association of five members. Inquiries from Kamloops and other interior sections have been received soliciting affiliation. The association meets every Wednesday night and meetings are well attended.

A standard list covering certain items has been gotten out and real progress is being made. The association is considering the inauguration of a listing bureau, and later estimator classes may be formed. The full mill bid schedule is also being considered.

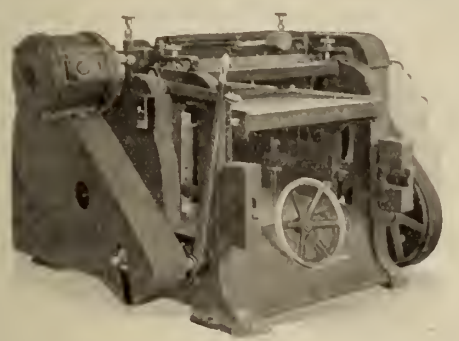
The membership is as follows:—Arbuthnot Sash & Door Co., Vancouver; Arbutus Sash & Door Co., Vancouver; John Arnot & Sons, Vancouver; British Columbia Glass Co., Vancouver; James Brooks Woodworking Co., New Westminster; Coast Lumber & Fuel Co., Vancouver; Canada Sash & Door Co., Vancouver; Cantelton Lumber & Shingle Co., Vancouver; Cedar Cove Sash & Door Co., Vancouver; E. C. Chrystal & Co. Ltd., Vancouver; Cornish & Cooper, Vancouver; Carleton Sash & Door Co., Vancouver; Eburne Sash & Door Co., Vancouver; Galbraith & Sons, New Westminster; Hodgson Lumber Co. Ltd., Vancouver; Robert Helmer, Vancouver; John Hanbury Co. Ltd., Vancouver; Jones & Son, Vancouver; Johnson Sash & Door Co., Vancouver; Lumber Services Ltd., Vancouver; Kamloops Sash & Door Factory, Kamloops; McLeod Sash & Door Co. Ltd., Vancouver; Mill Cut Homes & Lumber Co., Vancouver; Reid Sash & Door Co., Vancouver; Robertson & Hackett, Vancouver; Western Sash & Door Co., Vancouver.

E. C. Chrystal, the president of the B.C. Woodworkers Association

Machinery & Equipment

An Improved Motor-on-Head Surfacer

Wonderful changes for the better have taken place in the design and building of surfacers or wood planers, as some of the users call them. Not long ago it was universal practice to place at a considerable distance behind the surfacer an enormous countershaft with belting extending from the countershaft to the drive pulleys. The advent of the 3,600 r.p.m.

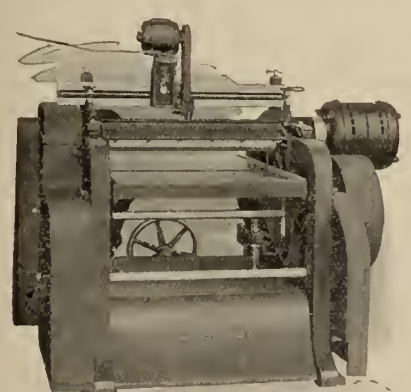


Motor-on-head 30 in. surfacer with ball bearings, sectional in-feed roll and sectional chipbreaker

motor made it possible first to couple the motor on the end of the cylinder which economized in the matter of floor space, increased the efficiency and made the machine comparatively safe to operate.

The introduction by the various motor manufacturers of the shaftless type of motor has made it possible to mount the rotor of the motor directly on the shaft of the cutting cylinder, the stator of the motor being fastened directly to the frame of the machine. This does away with the belting, and with the ball bearing surfacer maximum efficiency is obtained.

All of the Oliver surfacers have undergone this development during the past month and the Oliver Machinery Co. are now offering the Oliver No. 61 improved motor-on-head-surfacer which is a ball bear-



Rear view with motor knive grinding attachment

ing machine and a somewhat smaller type known as No. 199 single surface planer.

Although the No. 61 surfacer bears the same number as an earlier surfacer the changes are so radical and the benefits so obvious that the Oliver Co. are discontinuing the old machine known as No. 61 in favor of the new ball bearing motor arbor machine.

On the smaller machine which is made in 20 and 24-inch sizes only, the machine is also radically different and bears a new number, viz: No. 199 whereas the old machine was known as No. 99.

Along the direct mounting of the motor the Oliver Co. have developed a motor knife grinder known as No. 100. This motor knife grinder, which operates from a lamp socket, is designed to operate on any of the Oliver surface planers or jointers. It grinds the knives, or perhaps we should better say, joints the knives while they are held securely in place in cutting position in the heads. Frequent wheting and jointing is a comparatively simple matter and it is easy for the operator to keep his knives constantly sharp.

Large Hardwood Mill Purchased by Turner-Farber-Love Co.

Negotiations were completed recently whereby the Turner-Farber-Love Company of Memphis, Tenn., purchased the famous Lamb-Fish mill at Charleston, Miss., and other property which includes 18,000 acres of virgin hardwood timber; 3,000,000 feet of hardwood lumber on sticks, 12 miles of logging railroad with seven locomotives and complete equipment, three skidders, three log loaders, three batteries of dry kilns, the Lafisco Hotel and commissary, a golf course and 54 houses.

Acquisition of the Lamb-Fish properties makes the Turner-Farber-Love Company the largest operating concern in the entire hardwood field. With its combined mills the company becomes it is said, the largest producer of hardwood lumber in the world.

The Turner-Farber-Love Company will operate a large band mill with resaw at Memphis, a double band mill with two resaws at Charleston, Miss., two band mills with two resaws at Leland, Miss., a band mill with resaw at Tchula, Miss, a stave mill at Yerger, Miss., a shingle mill at Pantherburn, Miss., and an export assembling yard at New Orleans.

Executive offices of the company are maintained at Memphis, with sales offices in Chicago, New York, Greensboro, N. C., London and Liverpool. In addition to the British offices, the company has sales connections in every important European market.

The combined mills of the Turner-Farber-Love Company produce 320,000 feet of hardwood lumber, 75,000 staves and 60,000 shingles per day. The company owns and controls millions of feet of hardwood timber, all in the Mississippi delta, which will provide 10 to 15 years of continuous operation for the mills.

Officers of the company are Franklin T. Turner, Memphis, president; G. A. Farber, London, vice president in charge of European sales; H. D. Love, vice president in charge of Memphis mills; R. W. Ricketts, vice president in charge of Charleston mills; F. G.

Woods, vice president in charge of export sales; C. E. Robbs, vice president in charge of Leland mills, E. C. Gause, vice president in charge of Tchula mill; C. W. Parham, treasurer and sales manager; G. W. Harris, secretary; H. Johannsen, assistant secretary, and W. F. Little, manager of the cooperage department.

The Importance of Pulley Balance

By Nathaniel

A small mill built on what was practically swamp ground on the edge of a lake, was having a great deal of trouble with its main shaft. Millwrights who investigated the situation claimed that after every heavy rain the foundation changed or altered and thus accounted for the trouble. The writer, though not a mill man, was asked to look over the mill and advise what should be done. The owners, however, were loath to spend much money on the plant because of the fact that most of the timber in the vicinity was cut out.

The main shaft consisted of three lengths of a 2-7/16 in. shafting coupled together and running at 450 revolutions per minute. The couplings were keyed on in halves and bolted together. Within a period of a few months the shaft had been broken twice, bent three times and parted at the couplings more than once. The power transmited was 125 h.p. and the six important pulleys were home-made of wood with cast iron flanges on either side and keyed to the shaft.

My investigations indicated that these pulleys were out of balance and that the foundation, while not good, was possible. For that reason I advised the scrapping of the pulleys, a reduction in the length of the shaft from 48 feet to 32 feet, using the same number of bearings and the placing of a new lot of split wood pulleys. This change was carried out with one exception, viz., that the main drive pulley, being an odd size and width and difficult to replace, was left without change, as it was apparently in good shape and had been turned true right down to the iron flanges.

After the alterations were made and the shaft was speeded up, the vibration was so great that the help ran out of the mill. In an attempt to remedy this the length of shafting on which the old pulley was located, was lifted up and temporary balancing ways rigged under it. Eight pounds of iron and bolts were necessary to bring it to balance, but when it was started the second time, the shafting ran like a top and has given no trouble in many months since.

To estimate the total loss attributable to the breakdowns, which involved consequent loss in production, waste of wages and high cost of repairs, etc., during the three years the mill was running, would be impossible to determine. In my opinion $1,000 a year would hardly cover these items. Consequently, it is a very important thing from both a cost and production standpoint to have ""pulley balance" in your transmission.

Veneered and Solid Furniture

Although there is a public prejudice against veneered products, a large proportion of all the furniture manufactured has more or less veneered construction in it. The high-grade finish woods are used almost entirely as veneers. More table tops, drawer fronts, doors, and side and end panels of all kinds of furniture are built up of three or five layers of wood than are made of single solid pieces.

Veneer construction has several advantages over solid wood, besides permitting the use of cheaper material in the core or on unseen surfaces. These advantages should be borne in mind by the purchaser who thinks that veneering cheapens the product.

Alternate plies in practically all built-up panels are laid with their grains running at right angles to each other; that is, in three-ply veneer the face veneers are glued at right angle to the core, and in five-ply material the face veneers and the core are parallel and the intervening layers or crossbands are laid at right angles. A panel of this construction has the advantages that it is more nearly of the same strength in all directions, and that as it absorbs or gives up moisture it shrinks and swells about as much one way as another. Splitting along the grain in one set of plies is made impossible by the cross grain of the alternate plies, and rapid shrinking across the grain in the face veneers is offset by slow shrinkage along the grain in the core.

Veneered panels do not change dimensions as much as solid wood. Warping is largely eliminated in thick panels by plywood construction.

More care can be taken in the selection of surface wood in veneered furniture than can be taken in solid furniture. The manufacturer can dry veneer stock very quickly and cheaply, and he can utilize all of his wood to the best of advantage.

Veneered furniture, if properly cared for, will last as long as solid furniture. The glued joints when correctly made are as strong as the wood under ordinary service conditions. Long exposure to very damp air or direct contact with water, of course, will decrease the joint strength even when a very water-resistant glue is used. But such service conditions would be almost as detrimental to solid furniture as to veneered furniture, because even in solid furniture the members are joined together with glue.

Enterprising Door Firm Has Grown Rapidly

In the Toronto Year Book, which has just been issued for 1923, an appreciative reference appears with respect to the Pannill Door Co., Limited, Toronto. The article states that the Pannill Door Co. was formed in 1919 and has met with signal success. The company are sash and door merchants and carry in stock large quantities of many different types of doors now used exclusively, not only in residences but in public buildings, such as hospitals, office buildings, hotels, schools, etc. The firm claim that they are able to give the contractor or builder doors out of stock with no further notice of time than is required to get the order out and delivered.

The firm also buy in very large quantities, in some cases as high as 10,000 doors at a time. It is pointed out that during the building season the firm employ thirty people to look after their business. The staff of salesmen cover Toronto completely and are known personally to about ninety per cent. of the builders because they are not only selling doors but, after a sale is effected, they continue to visit their customer checking up continually to see that satisfaction in the fullest measure has been delivered.

The Pannill Door Co. have a permanent exhibit of doors at their showrooms, 131 Front St. East, Toronto.

Upholstering and Trimming

Method of Upholstering a Luxurious Type of Chair

Details of Covering a Chair Having a Seat of Unusual Depth and a Back Like a Double Cushion

The chair illustrated in figures 232 and 232A is a luxurious type having a seat of unusual depth and a back which simulates the appearance of a double cushion.

The seat is built with a spring edge platform, using 16 deep springs tied down for the spring edge shown in fig. 233. It will be noticed in this figure that the wire edge goes back at each side even with the outside edge of the outer row of springs and is fastened to the top of the back corner spring, the object of this being to form a square spring platform as a seat base. Only one-half inch is allowed between the edge of the wire and the inside of the front arm post, as a wide crevice here would be objectionable.

This platform is next covered with burlaps as shown in fig. 234 and a nosing similar in construction to those already described in connection with spring edges or a light double-stuffing is added so as to provide a stitched edge as shown in fig. 235.

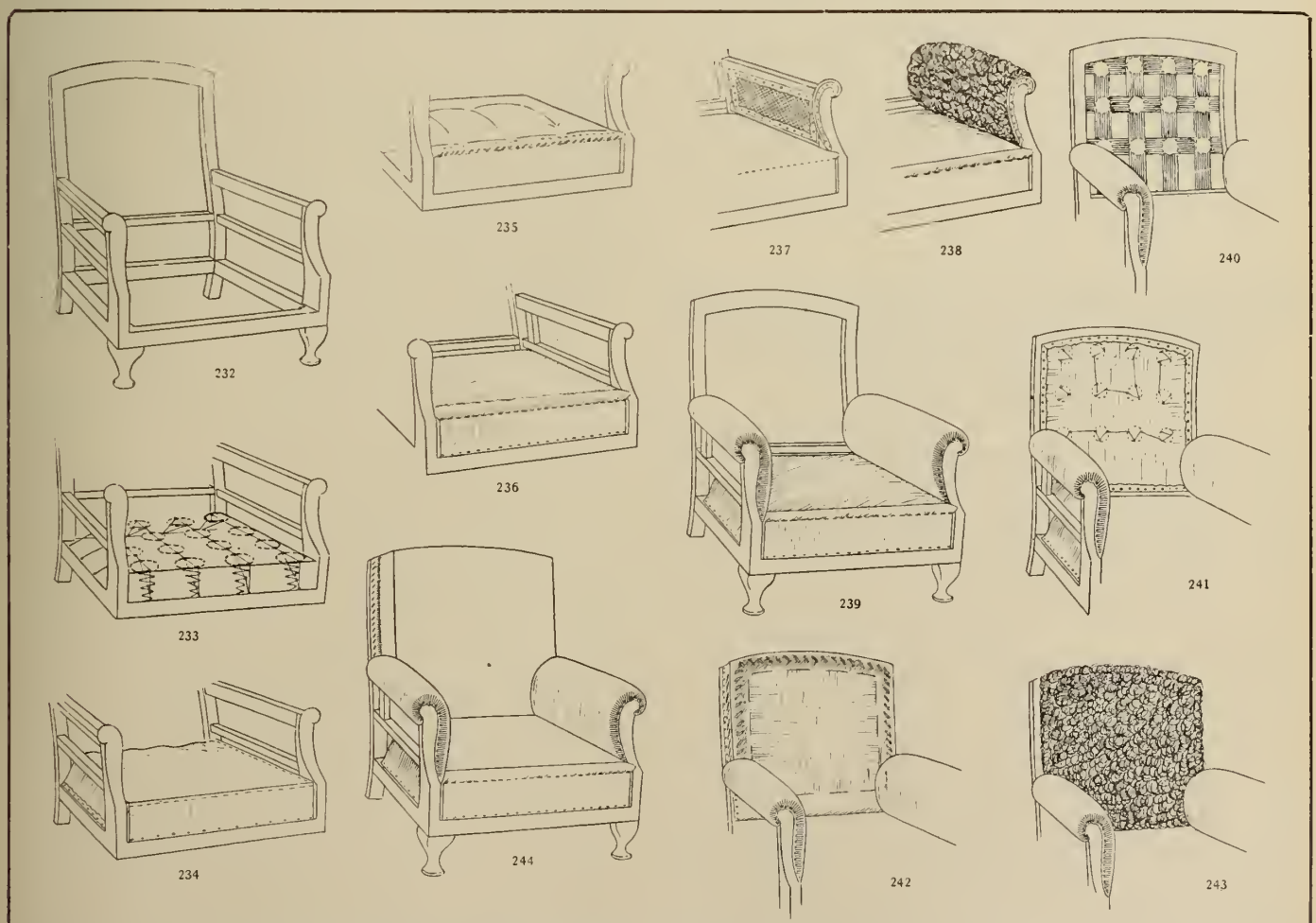
The platform is now covered with a light layer of hair and wadding and the nosing also covered with wadding and covered in muslin or sateen as indicated in fig. 236.

The next step is the upholstering of the arms and this follows the plan described in connection with chairs of a similar character so that the detailed diagrams of figs. 237, 238 and 239 are practically self explanatory.

Fig. 240 shows the preparation of the back by webbing on the outside of the frame as a foundation for 12 pillow springs and also indicates the pillow springs in place.

In fig. 241 these springs have been tied down and covered with burlaps and also stitched to the burlaps. In fig. 242 a light double-stuffing has been applied so as to form a soft, stitched edge, which will give the edge of the chair a thickness, as pictured, of about 3 inches including the frame.

A light layer of hair is now placed on the back

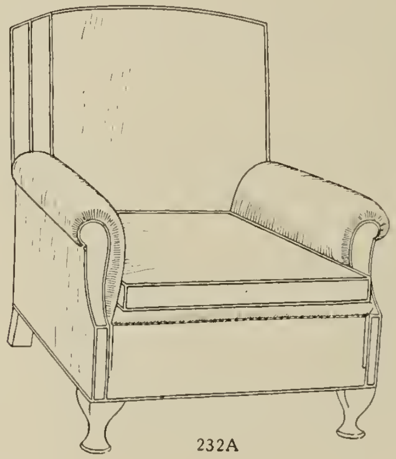


Details of upholstery operations as applied to a deep cushion chair

as shown in fig. 243 and the down-filled cushion, previously prepared, with a 3-1/2-inch border, is sewn to the stitched edge as indicated in fig. 244.

A final band of muslin is added to the back to cover the stitched edge so as to present the appearance of a double-cushion back, the border of each section being 3 inches wide and giving the appearance of two cushions which total 6 inches of back upholstering.

In making up the covering for the down cushion for the back of this chair, the semblance of a double



232A

cushion is carried out by a 6-inch border divided into two equal, divisions of 3 inches each by a center welt, and a welt also outlines the front edge of the cushion and another one on the bad edge of the frame. The chair is finished with welted edges at the bottom and at the corners as shown in fig. 232A.

The panel which covers the face of the arm is surrounded by a welt, thus keeping the chair simple in trimming without sacrificing any of its comfort or its harmonious lines. Cords or moss gimps may be used in place of welts.

Practical Way to Mark Hides

Use of Steel Dies Which Leave an Indelible Imprint on the Leather

After a shipment of tanned hides has been received at the factory, it becomes necessary to re-measure them in order to verify and check the invoice. On account of their irregular shapes, a measuring by hand would be very awkward and would take considerable time. To save time and make it easy, writes Rene Sulk in "The Furniture Manufacturer and Artisan," special measuring machines have been constructed. In the Turner tanning machine, for example, one simply passes the hide to be measured through this machine and its footage appears on the dial in the center.

After running the hide through the machine, the checker reads the footage from the indicator and marks the hide with a brush or crayon. Most factories use wax crayons for the marking. This is all right as long as only finished hides are handled, but when the hides are to be finished in the factory other methods have to be used. The acids used in the staining, drumming, staking and lacquering processes, obliterate all traces of markings, even when made by specially prepared chemical inks. It then becomes necessary to re-measure and re-mark each hide after it has been finished. If this re-measuring is not done right after the finishing time, it surely will have to be done at inventory.

A very inexpensive but practical method to produce an indelible marking is the use of steel dies as shown in the illustrations. The dies are about five inches long and attached to a handle of about ten inches. Since the average goat hide runs from six to twelve square feet, dies should be made with the following numbers:

6, 6¼, 6½, 6¾, 7, 7¼, 7½, 7¾, 8, 8¼, 8½, 8¾, 9, 9¼, 9½, 9¾, 10, 10¼, 10½, 10¾ 11, 11¼, 11½, 11¾, 12.

A special rack for these dies can be built for a few cents and it greatly simplifies the handling (see photograph). To facilitate the handling, the numbers are also painted on the opposite side of the die head.

Should cowhides be measured and handled, corresponding numbers have to be used on the dies. One man passes the hides through the measuring machine while the other reads the footage on the dial. One end of the hide is then placed on a small lead plate and a slight blow is sufficient to imprint the number.

How Can Better Millwork be Obtained

(Continued from page 64)

construction of millwork and in most cases has a very limited knowledge of materials; the kind, nature, and proper treatment of woods, or their relative values.

Now, in theory at least, the specifications for any porject are of the greatest importance and should be written by the most competent person in the office whether he be the head of the concern or not. A thorough understanding of the thing to be undertaken is naturally the first requisite. Then in writing the specifications the plans and drawings should be followed so that anyone who is later to have anything to do with them will have no difficulty in understanding what is wanted; and that the plans and specifications harmonize with each other. It would seem that frequently the specifications are treated as an after-consideration. The plans in many cases are prepared with great care but the specifications supplementing the plans become a hurried and frenzied undertaking. I have no doubt that in many cases, and this is perhaps particularly true in the case of residences, that the specification for some previous job, similar in nature, was copied with only such changes here and there as seemed necessary. The result is often a sorry patchwork and proves a great vexation not only to the millman, but to other crafts as well. While the "general conditions" and certain other items may have become standardized by different architects in their practice, the rule should certainly be that every specification should be written to fit the particular job in question and should carry out the intentions of the architect and to properly complete the undertaking according to the plans.

It might be stated here that the failure on the part of the architect either to understand or clearly state the requirements and use of the different woods called for, their grade, quality, and color, causes much anxiety and doubt to the millman. One of the most common instances occurs in connection with birch

and may be cited as an example. For finish and other interior work this wood is frequently specified as "unselected birch," "red birch," "white birch," or "selected birch." It has been my experience that very often the architect specifying these different kinds of birch has no very definite idea of their meaning. At any rate he usually has something different in mind than the millman is lead to believe from the description given. Take the first kind mentioned—"unselected birch." I dare say at least half of the architects and probably a large majority, when questioned as to what they understand by "unselected" would not be able to give a correct answer. The chances are that they believe that unselected means unselected as to quality, and that it is of an inferior grade to selected birch. Now, as a matter of fact, every millman knows that unselected used in connection with birch does not refer to the quality or grade at all, but merely to color. This grade of birch permits of sap and heart wood indiscrimately but has no reference to the quality. "Red birch" is pretty generally understood both by architects and others. But when we come to "white birch" more difficulties arise. White birch, of course, is sap wood only. Most architects believe that white birch is less costly than red birch. That is a natural inference in the case of most woods but is not true of birch. It is a great deal more costly to provide white birch for a job than red. As a rule, there is less sap wood in a log than heart wood. It not only takes longer to make the selection but more waste results. Then, finally we have "selected birch." Now, that description does not mean anything to a lumberman or a millman. It does not state whether it is selected for color, for quality, or for anything else. It should be borne in mind, always, that whatever kind of wood is specified the grade or quality required should be based on the rules laid down by the recognized lumber manufacturers' associations of their respective kinds. The grades with which architects and millmen are chiefly concered are "firsts," "seconds," and "selects." In all the grades certain defects are permissible under the rules. These defects should be recognized by the architects and permitted in the finished millwork in acordance with the grade of lumber specified.

Confusion Over Specifications

In addition to what has already been said a few other items may be indicated. Great uncertainty is encountered by the millman when "white pine" is specified without further designation. There are many different kinds of white pine, varying greatly both in quality and price, and the particular kind wanted or permitted should be specifically stated.

There are three different methods used in the production of veneers: sawing, slicing, and rotary cut. Veneers produced by these various methods of manufacture differ greatly in effect and price. Very great care should be used in making known what kind is wanted. Thickness of veneer desired for the different kinds of work should also be given and not left to speculation. Matching of panels in sawn and sliced veneers is frequent. This is expensive work and should not be expected unless clearly expressed in the specifications.

Specifications should definitely set out whether millwork is to be stained and varnished or painted. In painted work certain defects in the material may be permitted without any sacrifice either in effect or durability and with a corresponding saving in price. But the extent of defects permitted should be thoroughly covered by the architect.

The foregoing is merely to call attention to a few of the more common difficulties encountered. Space will not permit further enumeration of such difficulties, but merely directing attention along these lines will reveal the need for careful endeavor and show how frequently the architect fails in his duty both to the millman and to his client.

There are many other things that could be mentioned as short-comings of the architects in writing their specifications but I will mention only one other. Evidently realizing their failure to fully cover the work to be undertaken, architects will insert somewhere in their specifications a general clause—a drag-net—intended to catch the millman and to save themselves in case it turns out that something has been omitted, or which they have failed to properly set out. These general clauses are not at all unusual in architects' specifications but they are unfair to everybody concerned. Within the last few weeks I ran across one of these general paragraphs applying to the millwork on a certain job. This specification came from the office of an architect who is very careful and conscientious in his work. After setting out what he at the time considered all the millwork on the job and which he expected the millman to furnish, he wound up his effort by the following:

"The contractor for the millwork will be required to furnish any other millwork which may not have been mentioned in this specification but which is necessary for the proper finishing of the building."

It would seem obvious to everyone that if the architect does not know at the time of writing the specification what he wants in the way of millwork, it is unfair to expect a millman to bind himself to furnish, at some future date, something which may later seem necessary for the proper finishing of the building, although not known to the architect and not mentioned at all in the specification at the time.

It should be understood that many of the shortcomings of the architect, from the view-point of the millman, are closely bound up with the general contractor, standing between the architect and millman. It really becomes impossible to justly consider the shortcomings of the architect without at the same time considering the contractor. Owing to the position occupied by the contractor, he really in many cases becomes the representative of the architect and takes advantage of this to further his own ends by preventing direct consultation between the architect and the millman. The sins of the architect are indeed mild as compared with those of the contractor. But his sins are of a kind, the unmasking of which belongs to another story.

(To be continued)

A Large Dry Kiln Order

The largest order ever placed for dry kilns is reported to have been received by the Natonal Dry Kiln Company, of Indianapolis, from the Ford Motor Company. The order calls for thirty-two zone type kilns, each with a holding capacity of approximately 175,000 feet of lumber, varying in accordance with the thickness and length of stock under treatment.

The kilns will be erected at Iron Mountain, Michigan, where, a year ago, the National Dry Kiln Company built twenty zone type kilns for the Ford plant.

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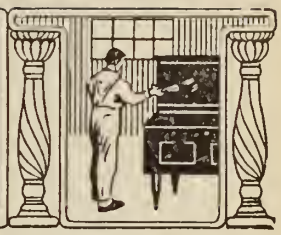

New Finishing Materials

Rubber Latex Gives Promise of Being of Great Value for Paint and Varnish Purposes— Furfural as a Remover

They have a Paint Research Bureau at Washington, with a very able man at the head of its laboratory, Mr. H. A. Gardner, whose papers on paint subjects are the classics of the day, and who read one at a recent meeting of the International Association of Master Painters, in Toronto, Canada, from which I here reproduce such matter as will prove of special interest to all who have to do with linseed oil and varnishes. Mr. Gardner headed his paper with the title, "Problems in Paint Chemistry," and subheaded it with several different titles, the first being "A Promising New Liquid." From this article I give what follows:

The new liquid is called rubber latex, a sample of which was secured from abroad through a New York broker, and is supposed to have come from a British colonial rubber plantation. Another sample came later on from a Mexican ranch, which contains some half-million wild rubber trees, and somewhat more than half as many cultivated rubber trees of about fourteen years' growth. Both these samples were white, limpid fluids of about the consistency of very thin skimmed milk. The British sample was of lighter, cleaner color than the Mexican. Both samples were evaporated in basins at room temperature, in glass pressure jars attached to a vacuum pump. This procedure was necessary in order to prevent formation of a surface skin such as would form during evaporation of the milk in the open. The residue of solid crude rubber found was 42 per cent in the case of the British, and 31.6 per cent in the case of the Mexican. The residue from the British milk was of a somewhat lighter color than that from the Mexican.

Mr. Gardner says he has carried out a series of experiments with these samples, to determine their possibilities as liquid components of paints. He found the following general results: When latex is spread it forms an opaque, white surface which upon evaporation (requiring about an hour's time) develops into a perfectly clear, transparent, rubber film of a firm surface. When about an equal quantity by weight of pigment is introduced the drying time is hastened, and a flat film of good opacity is obtained. This result, continues Mr. Gardner, would suggest the possible use of rubber latex in waterproofing compositions, or in wall paints such as must have a washable surface. But unfortunately the addition of pigments causes the precipitation of the rubber mass, forming a solid white rubber. Even when the latex has been washed free of any of its acids or traces of mineral salts, this precipitation occurs. Mr. Gardner recognizes the necessity of much more experimentation in an effort to overcome this feature, and already has found that pulverized silica, as well as certain earth colors, may be mixed with latex without causing trouble. To give an idea of the extent of his labors in determining this one feature we may say that almost one hundred white pigments and colors were experimented with, in the effort to determine which would and which would not cause precipitation.

Another matter of interest is the fact that when rubber latex is added to linseed oil, mineral spirits, turpentine and similar materials used in the manufacture of paints and varnishes, almost immediate precipitation of the rubber occurs. Mr. Gardner says that he has worked out a method of stabilizing the rubber latex in order to largely overcome the difficulty with pigments as well as with paint liquids, such as those above enumerated. The method is based largely upon the assumption that the latex is an emulsion of small rubber particles coated with a protective colloid of albuminous or resinous formation. The colloid prevents the particles of rubber from coalescing. Provision must therefore be made to prevent the disturbance of the colloids. If weathering tests prove successful, further mention of the method will be made.

The rapidly growing shortage of paint oils throughout the world, and the tremendously increasing consumption of paints and of varnishes, would suggest that rubber latex should be considered as one of the possible paint and varnish liquids of the future, says Mr. Gardner, and adds that this is further suggested in view of the almost unlimited quantities of latex that could be produced in many parts of the world. We who are deeply interested in this matter will watch his further experiments with latex with no little concern.

Another subject treated in this able paper concerned paint and varnish removal. He called attention to a substance known as furfural, as developed by the Department of Agriculture, and as offering to the paint and varnish industry two new products. Furfural is obtained from corn cobs, of which the west can always provide a large and steady supply at very low rates, as the cobs are a waste byproduct, and at best useful in a limited degree for fuel. Mr. Gardner says that the synthetic resins now obtained from furfural are too dark to use in varnishes; later developments may afford better products.

The use of furfural as a paint and varnish remover seems to be the most interesting development at the present time. The odor of the liquid furfural is pleasant, resembling almond oil. Its specific gravity is greater than water, its flash point over 100-deg. C., and its boiling point similar to that of turpentine. These properties make it much safer to use from a fire-hazard standpoint than the more volatile liquids. Its effect upon the skin does not seem to be harsh and, because of the absence of wax, it ultimately

leaves a clean surface that takes subsequently applied paint and varnish satisfactorily.

He states that in small laboratory tests furfural was found to have a very slow evaporation rate, due to its low vapor tension, remaining for over an hour on a horizontal surface. Upon an upright surface it tends to flow readily, which would suggest its use in connection with a stiffening medium. It also exhibits a tendency to draw up in globules (surface tension effects). Apparently this can be overcome by the addition of 20 per cent solvent naphtha (high flash, 160-deg. benzol) with which it is miscible.

The following table accompanied Mr. Gardner's interesting paper, and will be found interesting as well as instructive to the practical workman, who may not understand much about the chemistry of paints and varnishes and their component liquids.

Miscibility of 50 parts of furfural with 50 parts of the common paint (and varnish) liquids; by volume.

Tung Oil—Completely miscible.
Linseed Oil—Partly miscible; liquid slightly cloudy; evidently about half the oil is miscible with furfural.
Soya—Same as linseed oil.
Turpentine—White emulsion, separating into two layers.
Converted Pine Spirits—Completely miscible.
Solvent Naphtha—Completely miscible.
Benzol—Completely miscible.
Mineral Spirits—Immiscible.
Acetone—Completely miscible.

Mr. Gardner omitted mention of a very important matter in this connection, and I take the liberty of supplying the omission. It will happen that in case furfural proves all that is expected of it, the commercial high-priced removers will get a black eye. For many years back, under a patent right, the makers of commercial liquid paint and varnish removers have had a monopoly of these goods, and the consuming public has been obliged to pay the price or do without. Made from very low-cost substances, the commercial removers have sold at a very high price, and not one of us dared to make, much less sell, any remover containing one or more of the liquids entering into the composition of these liquids. Soon it will be different.—A. Ashmun Kelly in Veneers, Indianapolis.

Polychrome Has Now Come to the Front

Dull, Oil-like Finish Has Relegated Hitherto Prized Gloss to the Background—Appears in Many Forms and Ways of Expression

The Renaissance in its historical sense marked the universal reawakening of the human mind in the civilized parts of the world following the centuries of mental torpor intervening between the fifteenth century and the decline of Roman power and culture. Prior to that time furniture can hardly be said to have possessed a style—what little of it has come down to us has been chiefly pictorial and shows a massive quality in line and decoration that answers to the description of "Gothic." Translated literally this word indicates a reproach meaning "barbarian, coarse and rude."

Beginning with the Renaissance, writes Albert Brace in "American Furniture Manufacturer," furniture ceased to be an appanage only of the rich and powerful; the more affluent merchants and artisans of the day began to consider it in its decorative aspect and not as a purely utilitarian convenience. Of course this process took a very long time, a question of a chapter in a history book, perhaps but a hundred years or so in actual time. But from this general period may be said to date the development of a taste in mankind's feeling toward furniture, which as centuries came and went, changed more and more often with intervals of increasing shortness.

Public Taste not Tested

There were then no semi-annual exhibits to test out the public's favor through the medium of the dealer's contact with it—an artisan discovered a new wood process or design, a rich nobleman's fancy was struck, his friends observing, placed orders themselves and then their friends. Gradually a new school sprang up, the artisan's apprentices traveled to other countries to set up for themselves, modifying the style to this or that extent in their reproductions until now in museums we see an array of pieces vaguely suggesting one another but labeled variously Italian, Spanish, English, French, Dutch and German Renaissance.

Renaissance styles hung on longer in Italy than any where else, though in furniture it originated there long before its spirit had been carried to and copied in England and France. The Italians were artists first and wood carvers or cabinet makers only secondarily, that is, they considered decoration before fine lumber and turning. Hence their style quickly became rich and colorful—to make up for lack of fine woods they used cheap lumber painted and gilded, and in place of turnings and carvings a varied plastic ornamentation called "gesso duro." All of this was confined chiefly to tables, chairs and chests—nothing was known of upholstery but the seats of chairs were often leather, fringed at the front and sides and painted with heraldic emblems in green, blue, red and gilt.

The mention of Renaissance among most people connotes Italian largely because the development of furniture along the same lines in France, Spain, Germany and England was less significant. Its popularity in America, except among the connoisseurs dates only a few years back and was introduced rather as an experiment to ascertain if people were tired of the conventional English periods. The coloring caught the popular imagination and though the crest of the vogue of "polychrome" is past, it served to give considerable stimulus to two novelties important from the manufacturer's point of view: the lacquer finish and the possibilities of such superimposed decorations as overlays, inlays and painted effects.

Polychrome was perhaps a little too ornate and garish for a steady diet, moreover in the average home the dining and living rooms are too small to constitute a background comparable to the vast apartments of Florentine and Genoese nobles. The

few attempts to introduce Italian Renaissance motives into bedroom suites fell lamentably flat and odd living room pieces, hall chairs and dining room suites will probably always be the limit in this field. In any event polychrome, so called, created a most refreshing diversion in a trend of public taste that seemed hardening into conventional periods—a trend that boded not much of profit to the manufacturers. For a time it was to them as it would be to Paris dressmakers if women suddenly decided on overalls for a permanent garb.

As the public gradually turned from polychrome for the reasons above stated, attempts were made to keep its newly aroused interest alive by carefully calculated modifications. The gold, red and blue ornamentation was abandoned and in place of them appeared subdued stripings in terrachrome. Polychrome, as everyone now knows, means "many colors" when translated literally; terrachrome means "earth color." With it went the same scroll outlines, lyre shaped table ends and floor runners on chairs not to mention the dull finish, wherein lies the genesis of a preference that still obtains.

High Gloss Finishes

Matte finishes are not exactly a novelty—they had been current in years before the war on Mission styles, Fumed Oak, Jacobean, etc., chiefly through the medium of shellac and wax. Yet it cannot be denied that prior to the appearance of Italian Renaissance reproductions that furniture ran overwhelming to finishes that approximated as closely as possible the well known piano gloss—a rich, brilliant piling up of varnish coats that despite the inherent paleness of the varnish itself tended to build a thick, glassy protection over the wood. The effect of the varnish was then the thing, not so much the natural beauty of the wood.

Now the artisans of the Renaissance Period, whether Italian, French, Spanish or English, knew nothing about kauri gums, kettles and stacks, solvents and driers. Perhaps they knew something about shellac, but at all events they apparently used very little of it in their work for they bent their efforts in this direction rather toward preservation than toward protection. The solid wood was rubbed and rubbed and rubbed with oil until it shone with the mellow glow we associate with wax or velvet. Some of the oils used must have been appetizing to worms—at least some of the original pieces so indicate and the scorners of all but the "genuine" have furnished profits to the antique dealer skillful with the gimlet.

At one swoop therefore, the vogue for polychrome with its dull oil-like finish relegated the hitherto prized piano gloss to the background, the reaction carrying with it even much of the dull rubbed semi-gloss compromise. A problem therefore beset the manufacturer until the relative perfection of pale wood lacquer. For wax possessed certain obvious disadvantages and a reversion to the old tedious oil rubbing was out of the question. Lacquer, providing the necessary protection against hot dishes and wear and tear yet affords the desired impalpable, mellow glow, bringing out rather than obscuring the natural grain and figure of the wood.

Walnut is the chief wood used, and while for a time attempts were made to give it the grayish tinge peculiar to originals through the use of a stain and filler of appropriate hue, nevertheless, it was discovered in time that nothing was gained by artificial attempts to pervert the actual wood color. To darken possibly was proper as practically all oiled woods deepen in color with age, but to lighten proved a travesty similar to artificial worm-holing rather than a faithful effort to give present generations the benefit of an artistry too painstaking and significant to be betrayed.

The polychrome of which we are speaking was in its Italian origin a single material symptom of the rebirth of Europe; with its introduction and vogue here centuries later it reversed its role and became in a much more limited and commercial sense the harbinger of a reawakening of our slumbering natural sense of furniture as a decorative medium. To prove this contention it is but necessary to consider the condition of average taste in the years or even decades preceding the war.

Great Changes in Public Fancy

We had ginger-bread furniture in all its Victorian red, plushy, gim-crackish respectability, Mission in its "simple" curveless, ponderous monotony, dark colors and lifeness finish. And golden oak glaring in its unrelieved yellow brown glossiness—then natural birds-eye maple polished till the eye ached and Circassian walnut with unsubdued figure, and brass beds. Later came an apparent suspension of animation with red, turning to brown, mahogany and American walnut—unadorned Queen Anne mostly with much varnish polished or rubbed. No home was complete without it—apparently no home, newly-wed or otherwise, would ever have anything else.

Some ingenious soul, during or shortly after the war when the spirit of spending was abroad in the land, saw the possibilities of Italian Renaissance with its lively coloring and new appeal. It caught the popular imagination, reached its crest and waned but left a different popular attitude behind it. Look in the department stores and in the windows of big and small retailers today and do you see displayed what you would have seen ten, twenty or thirty years ago? You will witness a variety of finish and decoration, a daring in richness or novelty on the part of the manufacturers that would have staggered the home furnisher of another time—and not just in the exclusive shops either.

A random stroll along furniture row in any representative city will reveal some of the following: Brown birdseye overlays on walnut, hollywood or ebony inlays on mahogany, painted or transferred ornaments on walnut, hand decorated putty and rose enamel on breakfast suites, a polychrome walnut console, a parchment enamel Hepplewhite dresser, and two-toned effects without number, all, all in dull finished effects, except one Duncan Phyffe, the table top of which alone was polished—a concession to the departed spirit of American Colonial. Yes, Renaissance brought rebirth, and many colors of polychrome yet live even if different in form and expression.

Death of Henry Pedwell

The announcement of the death of Henry Pedwell, well-known retail lumber merchant of Thornbury, Ont., will be received by his numerous friends with profound attention and many sincere expressions of regret. The late Mr. Pedwell was in his 74th year.

Samurai Cabinet Enamel
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go further, cover better, sand better and hide better with fewer coats.

The correct Satin texture in twenty-one authentic colorings are shown in a descriptive folder which will be sent you on request.

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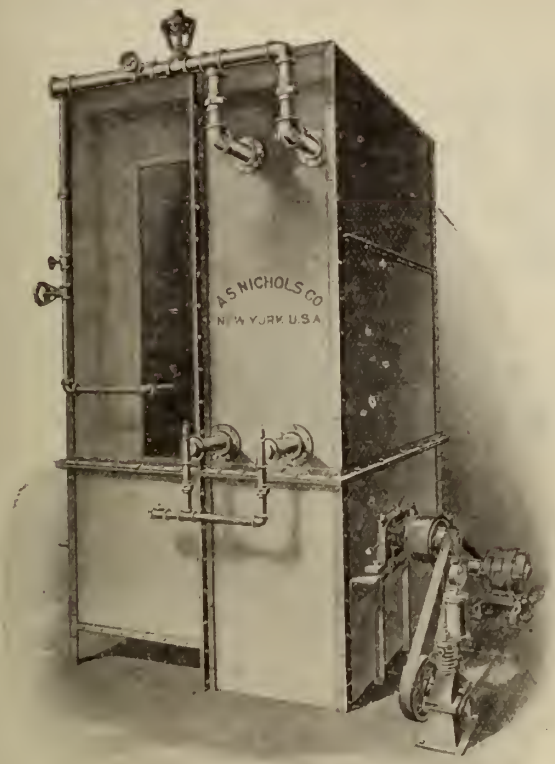

A Logical Conclusion

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Dry varnish 8 times as fast—....
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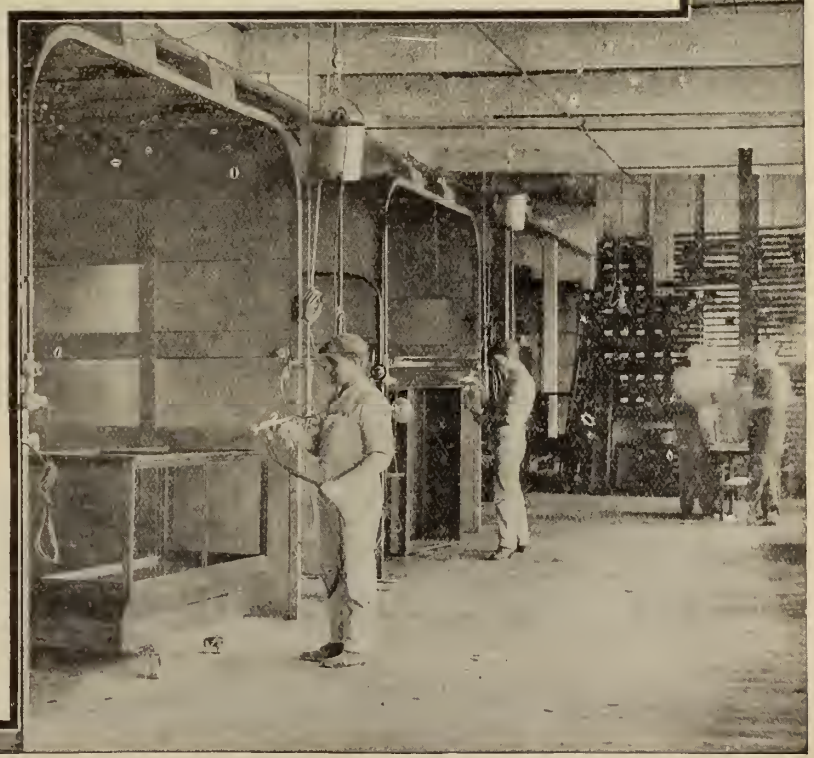

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FIGURED WOODS	ROTARY CUT STOCK	
Walnut (long and stumpwood)	Walnut	Up to 1/4" thick
Mahogany	Oak	
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VENEER SAWED STOCK

Walnut	Up to 1/4" thick
Mahogany	
Quartered Oak	
Plain Oak	
Quartered Gum	
Ash	
Poplar	

NOTE—Shipments are made only of stock which has been piled in our warehouse for at least 60 DAYS, and is therefore THOROUGHLY DRY and FLAT.

Veneers and Panels

Window Trims Offer Good Field for the Panel Maker

Panelled Backgrounds are Widely Used for Window Settings—A Profitable Market for a Properly Equipped Plant

By W. J. L.

One has only to walk along some of the streets in the shopping district of Toronto, or any other large city, to see many excellent examples of panelled window backgrounds. A great many of the smaller cities and towns also have their quota of stores with veneered panels to form a setting for the merchandise displayed in their windows.

A couple of decades ago very little effort was wasted in dressing shop windows. Proof of this, if one is not old enough to remember, is easily obtained. Visit one of the smaller cities—Kingston will do as well as any other, although it is by no means alone—and you will find stores operated by some of the older business men. Contrast them with some of the newer stores. The quality of the merchandise may be as good, or better, but it is not displayed the same.

A tailor of the old school shoved a few rolls of cloth into his window and let it go at that. If present-day tailors did that, they would get very little business. Men would be afraid to patronize them in case their ideas of styles would turn out to be as old fashioned as their windows. To-day a tailor dresses up his windows with finished garments. He may intersperse some rolls of cloth, but they will be placed differently than in the window of the old-time tailor. The wiles of the window dresser are many and it is not the purpose of this article to go into that subject insofar as venered panels enter into their work.

Illustrations could be reproduced of a number of examples of veneered window back grounds, and no doubt, such illustrations would give the reader a good idea of the trend of this work, but on the other hand, a short excursion through the town or city where he lives will reveal more illustrations than we could print with an article. Therefore, the writer will just describe here some of the examples he has seen, and if some woodworking firms are interested and desire to get after the storekeepers in their territory, they can find for their prospects many actual examples of panelled window work without travelling far from home.

A Good Example

The first example of window panelling that came to my attention when I started out to look over a few for the purpose of writing this article, was in a store catering to the high-class fur, millinery and ladies' wear trade. The store is located on a corner and thus has quite a long stretch of window on two main streets.

The woodwork in the window of this particular store is of quite an elaborate design. The wood used is burl walnut. The method of construction is several of these panels, six or seven, all joined together with pilasters between each group. The several panels joined together give the impression that it is one panel with joints in the veneer. That is hardly likely, however, as a huge press would be required to handle a panel of such dimensions. It is more likely that the panels were veneered separately and joined together by means of slip-tongues.

The pilasters between the panels follow closely the Corinthian order of architecture and have the carved cap peculiar to that particular style. These may be hand-carved, or for the benefit of any woodworker called upon to furnish them and not conversant with carving, it might be in order to say that very seldom nowadays are they hand-carved. In about nine cases out of ten they are pressed from a composition and it is difficult for any but an expert to tell the difference between these compo carvings and those carved by hand from wood.

The panelling in this window does not extend to the ceiling but has glass above. The sash are separated by wide mullions which are panelled on the front side. The glass does not spoil the appearance of the panelling as it is above the line of vision. This window is an excellent example of the panel makers' and cabinet-makers' art, and forms a worthy setting for any kind of merchandise.

An Attractive Arrangement

Another window worthy of mention was in a men's tailoring and furnishings establishment. The panels in this case were Circassian walnut and the stiles and rails were of gum. The plain figure of the rails and stiles shows up the figured panels to excellent advantage.

This store also is on a corner with a long frontage on one side and a comparatively short frontage on the other side. The panelling shows up best on the long frontage, of course. On this long frontage a feature of their displays is worth mentioning. They have artistic divisions to match the panelling which can be placed anywhere in the window. Having, as they do, so many articles to put on display, this gives them an opportunity to divide the articles instead of mixing them up in one long display. It also helps to centre the attention of a person looking in the window instead of allowing their gaze to wander over a large assortment of goods. By having the divisions movable as much space can be used as required for a display of any goods which the storekeeper may wish to feature.

A large wholesale men's tailoring establishment takes advantage of its location on a main business street to advertise its goods through the medium of a typical store window. They make use of a veneered screen as a background for the forms on which they display suits, overcoats, etc. This screen is very simple in design and resembles so many slab doors about thirty inches wide, arranged side by side, with

the joints covered by a plain batten. The tops of these door-shaped panels have leaded glass which is used very sparingly. This was certainly not a very costly window but was effective. Of course, it would not look well except in a large space and with a limited amount of goods, such as costumes, on display.

One could go on almost indefinitely describing store windows that have veneered panels as backgrounds. One that has not been mentioned so far is of quarter cut oak and of perfectly plain design. Care was evidently used in selecting the wood to get it with small grain. The large "splashy" flake was eliminated entirely from the job, with a pleasing result. The finish is a light golden, dull rubbed.

The outstanding feature of this store front is that there are a number of separate windows instead of just one. This makes an alcove effect, each window forming an alcove. This also is a men's furnishings store and the wall spaces between the windows have been used for advertising signs, the advertising being carried on glass panels.

A Large Field

The four examples described were picked at random. Undoubtedly there are many others that would furnish interesting descriptions. However, the purpose of this article is just to call attention to the large field that awaits exploitation, and the examples chosen were selected principally for the differences between them. Panelled window screens are used in many styles, some elaborate, like the first one described, and some in plain birch plywood stained mahogany or walnut. Others again are made of plain plywood—birch does very well—enamelled in various shades. Millinery stores are very often found with grey enamel panelling, not only in the windows but throughout the interior. Confectionery stores often affect the enamelled panelling also.

Many of the large departmental stores go in very strongly for panelled screens as window settings, and one of the features to be observed is that their panelled woodwork for this purpose is so arranged that more than one setting is obtainable. Some of the backgrounds the writer has seen are about three or four inches thick. They are hollow, of course, and perhaps have mahogany on one side and walnut on the other or they may be mahogany on one side and enamelled on the other.

Another changeable setting is to have the panel framework and have both panels and mirrors to fit in the openings. When it is desired to use the mirrors the panels are slipped out and vice versa. Another change is to have lattice work to fit in the openings on the front of the panels, thus dividing the panles into small squares. Many effective settings have also been secured by inserting colored paper between the panels and the lattice work. The panels are covered, of course, for the time being, but the muntins are visible and this arrangement affords a change which is sometimes desirable for seasonal offerings.

One men's store has at times used a setting that is attractive for fall displays. They insert yellow paper between the panels and the lattice work and then use leaves scattered profusely around the window, with a few branches tacked here and there on the panelling.

An Opportunity for the Woodworker

Most of this show window work has been corralled so far by the makers of store fixtures. They are probably the logical ones to do it, but at the same time it is any man's business who goes after it and gets it, providing he has a plant properly equipped to handle it

The fixture men look after the city work pretty well. They are following up all of the storekeepers anyway, as a rule, to sell them fixtures, showcases, etc., and they are in a position to take the window work up with them as well. No doubt, the fixture men are largely responsible for the extensive development in fancy window settings. The same arguments apply in connection with window settings as apply on showcases and wallcases. Briefly, it is this, although I do not know just how the fixture salesman puts it to close an order: Goods well displayed are half sold.

In the smaller towns and cities where the fixture people are not quite so aggressive, there is undoubtedly much business to be had by the local wodworking plants if they would go after it. The business the fixture salesman is most likely to be camping on is new stores being opened up. There should be plenty of the older stores, however, that could be sold on new window fronts.

The makers of panels are constantly looking for new fields to conquer. Well, it seems to me that there is a field which is not fully conquered as yet, although great progress has, undoubtedly, been made. The work does not present any complex problems from the manufacturing point of view, that is, from the technical side, but a few articles on the costs of store windows should be interesting to woodworkers. If any readers of the "Canadian Woodworker" have detail drawings and costs of some store windows, I think publication of them would be helpful to the trade in general.

Wide Interest in Gluing Course

The largest class ever enrolled has just completed the course in the gluing of wood at the Forest Products Laboratory, Madison, Wis. The course included a series of lectures on basic facts of wood structure, illustrated with slides and a moving picture called "Wood Wisdom." Other lectures gave the men an understanding of the causes of defects and blemishes in lumber, of the proper drying and handling of stock, of the prevention of casehardening and honeycombing, and of related subjects. A comprehensive series of talks covered manufacture and properties of animal, vegetable, casein, and albumin glues and their distinctive uses. Instruction that brought out the fundamental principles of veneer and joint gluing, and plywood and laminated construction especially interested the men. Methods of testing conditions of gluing and workmanship were demonstrated.

In round table conferences the men were advised concerning good and bad methods of veneering, the importance of careful control of conditions in glue room, and the value of the trial and error and achievement method in studying factors affecting any use of glue. An outstanding fact proved to the men in the course of the week's instruction is that, generally speaking, workmanship, and not material, is at fault when glue work proves defective. Frequent laboratory demonstrations added to the value of the instruction. The scientific knowledge of wood properties and uses, and of wood gluing at the command of the Forest Products Laboratory was care-

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

THE OHIO VENEER COMPANY

Importers and Manufacturers

Foreign and Domestic Veneers and Hardwood Lumber

We always carry a large and assorted stock of Mahogany, Circassian Walnut, Sawed and Sliced Quartered Oak.

Send us your enquiries and orders. We guarantee good service.

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American Walnut Veneer and Lumber.

Plain and Figured Veneers of All Kinds.

Western Office, 516 Lumber Exchange, MINNEAPOLIS, MINN. Mills at GLADSTONE, MICHIGAN

The Northwestern Cooperage & Lumber Co., Gladstone, Mich.

THE HOME OF "PEERLESS" STANDARD BRAND PRODUCTS

Manufacturers of

"PEERLESS" ROTARY CUT VENEERS

in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

Also hoops, liners and staves for manufacture of packages

Also "Peerless" Rock Maple, Beech and Birch flooring; Hemlock lumber; Lath, etc.

"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.

(When writing mention Canadian Woodworker)

fully related to sound practice in the gluing and wood working trades.

A remarkable fact is that these practical men fol lowed with keen interest work in the identification of woods, and other discussions that a few years ago they would have thought academic. This suggests that one of the greatest benefits of the course is that it inspires the men to careful study of all factors affecting their work.

This short course in the gluing of wood will be conducted again in September at the Forest Products Laboratory.

More Attention to Matching Veneers Pays

Extra Trouble Involved in Producing the Right Kind of a Finish is More Than Compensated by Increased Sales

By Alexander T. Deinzer

A popular dealer located in one of the larger cities showed the writer what were supposed to be high-grade dressers. He remarked: "Notice the difference in the matching of the veneers between this and that dresser. I buy the one from So and So, and the other from another firm."

I noticed that the designs were similar and that about the same amount of labor and material were involved in the manufacture of the two patterns. I then asked him:

"If it's a fair question, is there any difference in the price, and how much?"

My friend replied:

Yes, I pay several dollars more for the one than the other. However, I have learned that price is secondary and I'm going to cut out the concern manufacturing that freak matched dresser. I am sorry to do this because they are very fine people to do business with. The other concern is more or less independent, charge more money, but I am able to get the relative difference in the price. The design of the cheaper piece is as pleasing as the one costing more. However, the poorly matched veneer kills it."

Nearly every dealer, Mr. Manufacturer, has had the same experience. I cannot understand why more attention is not given to the matching of veneers and last but by no means least, the finish. Of course, it requires a little time to properly match veneers. However, isn't this time well paid when it is possible to get more money for the piece and when this carefulness tends to increase sales?

Quality Brings Success

I know of a very large upholstering concern charging from 50 to 75 per cent. more for their goods (similar patterns considered) than do most upholstering houses. They employ over a thousand men and are busy all the time, whereas when we have a slight depression in business most of their competitors are effected. Why? The large firm insists upon quality. Every piece is carefully inspected before leaving the shipping room and when the piece does not come up to standard it is not shipped. That is the secret of their success and every manufacturer can establish the same reputation if he will but direct the same careful attention to details usually overlooked or considered of little or no importance.

Uniformity is the most important part in matching veneers, and applies with equal importance to color, figure or texture, so long as it is the same species of timber.

Again, it is necessary to buy the right kind of veneer. It is impossible to buy high grade oak, mahogany or other veneers at 1 cent per foot, or slightly more, as some buyers seem to suppose. Before buying request representatives to visit your factory and to carry with them samples of veneers. When this is impossible request the veneer manufacturer to express samples. To use an old expression: "Do not buy a cat in the bag." When making your selection, don't pick out flitches which are unnecessarily weak and unsound. This applies especially to end wood veneers. All end wood veneer is bad enough without making the problem any harder than need be by selecting wood which has been nearly ruined by nature or the veneer cutter, before you get it. When you get a chance to buy first class veneers at a reasonable price, do not be afraid to invest money. The users of small quantities may wisely cultivate the practice of buying veneers in more liberal quantities of certain kind of veneers, instead of barely for immediate use. No, Mr. Reader, I am not a veneer salesman but I have bought veneers for our factory for many years and believe I know quite well what I am writing about.

Different Methods of Jointing

Different veneers users have different methods of jointing, and the right thing to do is to take the method most convenient and that seems to be best fitted for your particular line of work. When large quantities of veneer are used the veneer should be cut on an automatic machine. One of the most practical machines I have ever seen for this purpose is an automatic paper cutter. A prominent Grand Rapids furniture manufacturer is using such an outfit and informed the writer that the money invested for this machine is paying splendid dividends. Where only small quantities of veneer are cut, it is possible to do this jointing by taking a number of layers, clamping them between two boards and jointing them on a hand feed pointed. Of course, the advisability of it all depends on the amount of work you are doing and the equipment you may have to do it.

To make a good job of butt and side-joint work, one should have perfectly flat stock to work with; otherwise the veneered pieces will not come flat; also, in gluing stock which is not perfectly flat, the butt and side joints are liable to break in the gluing-up process, and is a serious matter in this case. Any variation from the true right angle in the joints is at once discernible to the trained eye and puts the job out of the high class grade entirely. Perhaps the best way to flatten veneer is to dampen and then press and dry it between wooden cauls, putting only two or three sheets of veneer between each two cauls, and

(Continued on page 90)

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

BIRCH POPLAR CHERRY WALNUT GUM

SAVE FREIGHT

Rotary Cut Birch and Gum

Why pay freight on gum veneers from southern points when our cutting mill is so near the border.

PANELS

We manufacture Tops, Fronts and Panels of all kinds

Ask for our "Ready to Ship" Stock List

MOHAWK VENEER CO., INC.

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"Established 1884"

GUELPH PATENT CASK CO. Ltd.

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Our season's stock of veneer logs, 2,250,000 ft. of Birch, Maple, Basswood, Ash and Elm, is now delivered in our yard, and we have added a 102" lathe to our equipment, consequently are in a better position to meet the requirements of the Canadian trade, both in single veneers and plywood, than heretofore.

All our panels are built with casein waterproof glue. We have increased our Warehouse capacity to carry our customers throughout the year.

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Sliced, Quartered, Rotary cut — **WALNUT** — Longwood, Butt, Crotch

The Best Selection Obtainable

Unequaled for Color and Figure

All indications point to an unprecedented demand for Walnut for furniture and interior finish. Good walnut veneer logs are very scarce, and daily becoming more difficult to secure. We have what you want at reasonable prices now, but late buyers will be forced to pay much higher prices for less satisfactory selections. Be wise and allow us to submit our samples.

A FULL LINE OF VENEERS AND PANELS

All ready for Prompt Shipment.

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Quality Veneers in

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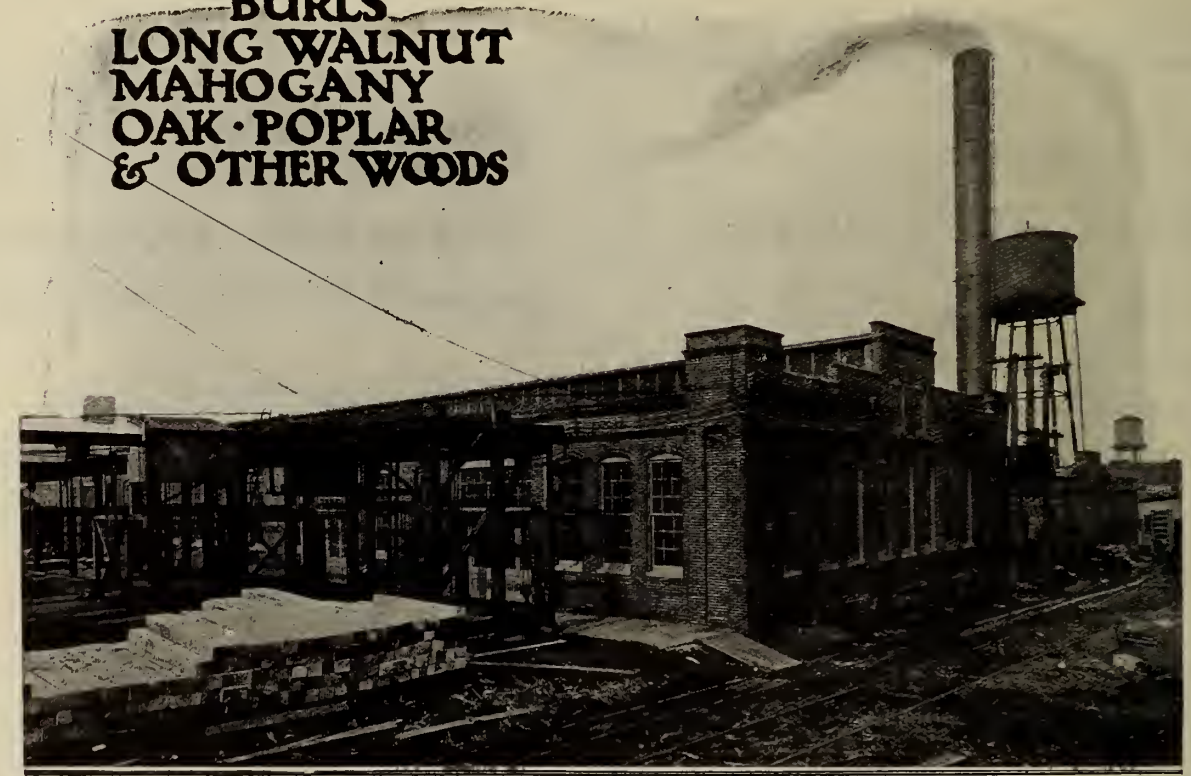


CUTTING-MILL FROM THE REAR - SHOWING SUPERSTRUCTURE OF THE VATS.

THE WILLIAMSON VENEER CO.

VIEWS OF OUR PLANT No. 8. *Photo by Hughes. H.G.W. Del.*

Ready to ship from Grand Rapids

1/20", 1/8", 3/16" Yellow Poplar

A Size for Every Purpose

WALTER CLARK VENEER COMPANY

GRAND RAPIDS, MICH.

Panels of Quality

for all purposes

Made to Order and Stock Sizes

FLUSH VENEERED DOORS

VENEERED STILES and RAILS

NATIVE OR FOREIGN WOODS

27 years' experience in Plywood Production.

HAY AND COMPANY, LIMITED

Woodstock - Ont.

More Attention to Matching Veneers Pays

(Continued from page 86)

allow it to remain under pressure several hours, or over night is about the right length of time. However, the drying may be done in much less time than that.

The writer has frequently been asked what wood he would suggest for core stock, especially when veneering with Qt. Oak face veneer. I well know that many manufacturers use what is known as "Sound Wormy Oak." Indeed, we at one time used the same class of material. However, I have found from practical investigation and from our comparative cost records that probably no wood is better suited for this purpose than chestnut or possibly ash (providing you can buy ash at the right price). This imformation is, of course, incorporated into this article for the benefit of those who are experimenting and have not yet decided what class of material will give best results and be the cheapest. Poplar also is a satisfactory wood for core stock.

Some of the manufacturers I know are using gum for core stock To those who have had little experience in handling gum lumber I would suggest it is very necessary to properly treat this wood before attempting to use, or trouble will result. Gum for core stock should be thoroughly seasoned or air dried before it goes in the kiln.

Give plenty of air space between the boards, and have plenty of cross strips otherwise the stock will "walk." When kiln drying, keep it in the kiln until it is thoroughly dry. Gum lumber has been cussed my many users time and again, however, it gives satisfactory results when properly treated. As stated, though, I highly recommend chestnut or ash for core stock.

A few of our friends have complained about oak veneer staining turning black or blue, especially when freshly cut before drying. This is hardly possible where one buys veneer from the veneer manufacturer for the veneer should be dry or partly so before he offers it for sale. However, in case where the manufacturer buys green veneer or cuts this himself it may be well to suggest that the veneer be run through a dryer immediately after cutting. Of course, after it leaves the dryer it will be necessary to keep it in a dry warehouse with no leaks in the roof. It is not uncommon to find veneer kept in the basement. This should not be done, especially in a damp basement. A small bundle of veneer represents money and after all a suitable place should be located in your factory.

There is no question but what it is an excellent thing to keep veneered stock screwed in the press until the glue has thoroughly set, rather than to clamp it up in the forms and transfer it to a place aside where it may stand. The use of forms is simply for those who make such a quality of glued-up work that it is essential to keep the presses relieved of holding work continuously, so that they may be used for something else. One great trouble with most furniture factories is, they haven't enough presses, hence, cannot allow the stock to remain in the presses as long as necessary to get best results. With modern power presses it would be impossible to keep stock under pressure until dry and in such cases it will be necessary to clamp the stuff down and take them out of the press. Where screw presses are used, extra time and labor can well be saved, but as with the factory truck, be sure you have enough presses.—From "The Furniture Manufactureer and Artisan."

J. T. Spicker Becomes Vice-President of C. L. Willey Company

Julius T. Spicker, recognized as an authority in the veneer and lumber trade, has become associated with the C. L. Willey Company, Chicago, Ill., in the capacity of vice-president. Mr. Spicker, who will be located in the Chicago office, brings to the Willey Company as invaluable experience, his activities having covered many years of intimate association with the veneer and hardwood lumber industries. This association has given him rank as an authority on all questions concerning log purchase, mill production and sales.

Mr. Spicker's first executive position was as general manager of the double band mill at Beattyville, Kentucky, owned by the H. Herrmann Manufactur-

ing Co., of New York City. After ten years with this company, he was nineteen years with C. C. Mengel and Bro. Co. of Louisville, Ky., Mr. Spicker handling the mahogany veneers and lumber, first as export manager. In 1900 he took charge of the entire mahogany sales in which connection he covered all of the important American markets.

In 1916 Mr. Spicker organized the Dean-Spicker Company of Chicago, being president and general manager. He resigned from that organization a little over a year ago, and has since been handling logs and other fancy wood products in a personal capacity.

Mr. Spicker has been so long and prominently identified with the fancy wood industry that he is almost an international figure in that circle of activity, being conceded an authority on many phases of the marketing of cabinet woods.

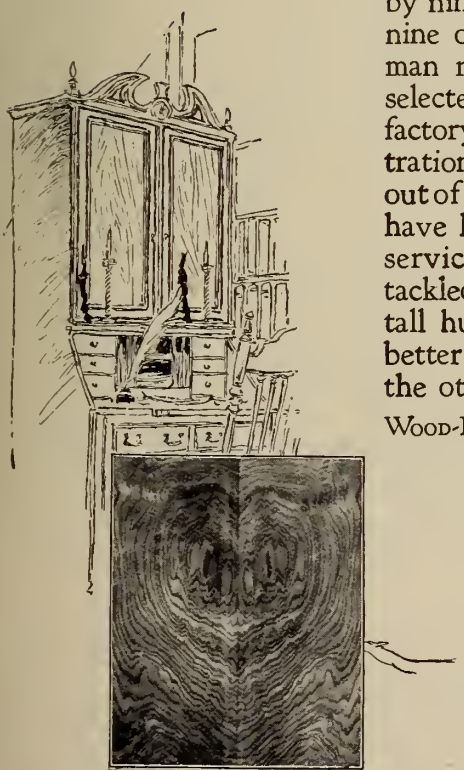
B. F. Sturtevant Co. Buys Western Plant

Owing to increasing business and the desire to be of still greater service to its customers, the B. F. Sturtevant Company have purchased the plant of the Wisconsin Engine Co., makers of Corliss Pumping Engines at Corliss, Wisconsin. This new acquisition covers nearly ten acres and the buildings have approximately 150,000 feet of floor space. A full manufacturing and engineering staff will be maintained and closer co-operation given to western customers.

THE BUYER LAUGHED—A *True Incident*

"YOU'RE crazy," replied the buyer for an Evansville concern. "It's two o'clock now. You can't *possibly* get that veneer here by nine o'clock tomorrow morning." ¶ "At nine o'clock tomorrow morning," our salesman repeated, "the veneer you have just selected will be here in Evansville at your factory." ¶ It was. ¶ That's just one illustration of how much fun the W M outfit gets out of giving our customers that of which you have heard so much and see so little—real service. ¶ Some service problems we've tackled have called for quick thinking and tall hustling. But the harder they are the better we like them—provided the fellow at the other end gets into the spirit of it, too.

WOOD-MOSAIC COMPANY, *Incorporated*, LOUISVILLE, KY.



W M
Veneers

The Lumber Market

Domestic Woods

In hardwoods, the situation has slowed down somewhat and the purchasing agents of large concerns have instituted what some call a "buyers' strike," that is, a movement against the higher prices. The term is somewhat of a misnomer but it sounds well, and, in the meantime, is doing duty night and day. Canadian exporters report that they will be kept busy for some weeks yet making shipments on orders already placed, and that, in the meantime, considerable business is likely to filter through. Firsts and seconds in birch and maple are rather slow and the call is for selects, No. 1 and No. 2 common. An improvement is also reported in the demand for the lower ends. The scarcity of dry stocks at the mills creates a situation that requires but little added demand to hold the market firm. Across the border, prices have declined somewhat and competition continues keen for business.

So far as Ontario is concerned, it is not expected that there will be any unusual activity in the lumber arena until after the summer holidays which are now at hand. Of course, there is always a movement of heavily loaded with stock, are reported to be rather anxious to get rid of it at a figure which will justify a clean break. Others, however, have abundant faith and are holding on, believing that the present is only a temporary period of uncertainty and that conditions will right themselves in the near future.

One of the leading authorities who specializes in forecasts, says: "In the last six or seven weeks there has undoubtedly been a lull in activity on the part of producers and distributors, but not of consumers. Evidence of this is to be found in the fact that primary activity and volume of orders has been declining, while car loadings, and retail sales figures, allowing for seasonal influences, are making new records. The conditions under which the so-called 'buyers' strike" of 1920 occurred are reversed. In the former case it was the producer and distributor who had unbounded enthusiasm, and the consumer who was growing cautious. Today it is the producer and distributor who are having the chills, while the volume of consumption continues to increase at a steady orderly pace.

"Fundamentally, however, there is absolutely no basis to warrant the expectation of a falling off in consumer buying before the beginning of 1924 at least. The present volume of buying is influenced by seasonal conditions, and seasonal influences will augment it in the fall and early winter. The present ratio of production to consumption is certain at the beginning of active seasonal consumer buying to find but little reserves in the shape of inventories, and it seems inevitable under present conditions that there will be a shortage of finished goods in the fall. As a result of present conditions we believe that the summer months will probably witness a slowly sagging primary and secondary markets, but that the last quarter of the year will be a period of active pressure upon producing centers, with fairly rapid price increase based on the necessity of middlemen to increase stocks in the face of low reserves."

Imported Woods

As far as conditions in the American markets are concerned, there seems to be fairly steady business, some centres even reporting improvement. The "American Lumberman," whose reports are always very accurate, reviews the market in this way:

EVANSVILLE, IND.—Hardwood trade has shown some improvement. The various wood consuming factories here are being operated on steady time and some are running extra time. Export demand has been holding up very well. Furniture and auto manufacturers are not buying in as liberal quantities as they were a month or two ago. Some veneer plants are being operated day and night, owing to the rush in business. Box factories continue to buy liberally of lumber. Wagon and buggy trade is much better than it was a month or two ago. Logs are expected to start coming in from the Green river country as soon as the weather improves. Practically no logs are coming in now from the southern market. There has been some slump in building operations during the last few weeks, although some contractors have about all the work they can do. There has been no trouble from car shortage reported lately. Sash and door dealers and planing mills are quite busy. The retail lumber trade has been holding up quite well. Farmers are buying more lumber than they were a year ago, many farm improvements going forward.

LOUISVILLE, KY.—Demand continues a trifle slow in hardwoods, but general reports from the far South indicate low production, as a result of continued rains and high water in the woods. A number of the Louisville houses with mills in the Delta districts report their mills as down, and production light. Prices continue firm on practically everything. The better movement is in red gum and sap gum, poplar, white oak, walnut, elm and ash. There is some demand for cottonwood and cypress, while hard maple is quite active. Beech is moving to chair factories.

MEMPHIS, TENN.—There is a slight increase in inquiry for southern hardwoods, according to members of the trade here. A number of firms have a great deal of lumber under order and they are shipping this as rapidly as it is dry enough to move. Most buyers of southern hardwoods are disposed to buy only for immediate needs. This is particularly true of manufacturers of furniture and automobiles. Demand from flooring manufacturers, too, is disappoint ing. On the other hand there is an excellent call from manufacturers of wood containers and from building trade interests other than flooring producers. Manufacturers of musical instruments, too, are in the market in a substantial way. The scarcity of shipping dry lumber is very pronounced in all items except red gum and shop and better cypress. Export demand is well maintained although not quite up to the peak reached during the latter part of May. Prices are generally steady, with the tone somewhat improved.

The Oliver Machinery Co., Grand Rapids, Mich., manufacturers of woodworking machinery, have concluded an arrangement with the Canadian Fairbanks-Morse Co., Ltd., whereby they will represent the Oliver Co. exclusively throughout Canada. The Canadian Fairbanks-Morse Co. have sales offices at all important centres in the Dominion.

C. L. WILLEY COMPANY

The Largest Veneer Plant in the World

THE artist's task is not merely to create beauty, but to double and redouble mankind's desire for beauty.

Let the desirable treasures of WILLEY'S rich Veneer be multiplied in value by your thoughtful and creative mind.

Veneer and Lumber

Walnut
American and Circassian
Mahogany
Quartered Oak
English Oak
Satinwood
Vermillion
Teak
Rosewood
And Many Other Foreign and Domestic Woods

(2404)

Reflections

A GRACEFUL hill, a grove of slender trees, a hovering, long-winged bird—how vastly their beauty is increased when mirrored, line for line, in the still water of a sheltered lake. White billowing clouds take shape in those cool depths as clearly as in the sky above, while the lonely fisherman looks downward through the magic looking-glass to watch for signs of coming showers. So is the beauty of an exquisite pattern of Veneer increased by repetition of the same design.

As Nature's reflection doubles Nature's effect, so the mind's quiet reflection doubles the power of thought. Look thoughtfully at a pattern of WILLEY'S beautiful Veneer; reflect upon it in your mind. Feel the enhanced effect of its perfectly matched duplication; give yourself time to appreciate, as only a true artist can, the effects which you can produce in the depths of human emotion by means of these silent symphonies of line. Study the true psychology of WILLEY'S wisely chosen Veneers.

C. L. WILLEY COMPANY

2558 South Robey Street
CHICAGO

H. ROBERTSON
Sales Representative
for Michigan
232 Lyon St., N.W.
Grand Rapids, Mich.

EARL VAN
Eastern
Sales Representative
Everett Hotel
Jamestown, N.Y.

News of the Trade

The Canadian Sawdust Co., 511 St. Catherine St. W., Montreal, recently suffered the loss by fire of their factory building on Des Erables St. The loss was $15,000 and the firm is undecided about rebuilding.

Donald Potter, who for the past thirteen years has represented Consumers' Cordage Co., and during the greater part of that time has been manager of their Toronto branch, recently resigned to take the position of general-manager of the J. R. Sterling Twine Co., Limited, Walkerton, Ont. Mr. Potter has entered upon his new duties.

J. A. Fay & Egan Company, of Cincinnati, Ohio, makers of all kinds of woodworking machinery have moved into their new plant at 2705-2805 Robertson Ave., at Oakley, a suburb of Cincinnati. Their new premises are much larger than the old plant and the company expect to increase production for which there is an increasing demand.

The American Furniture Mart Building, which is now being erected at 666 Lake Shore Drive, Chicago, it is claimed will be the largest building in the world.

The Canadian Top & Body Corp., Tilbury, Ont., expect to erect an extensive addition to their factory this summer. The Company manufacture auto and truck bodies, tops and trimmings and are finding a steadily increased demand for their product. They employ about 240 hands and have been operating a night shift lately.

The Sturgis Baby Carriage Co., Limited, Sorauren Ave., Toronto, have started to manufacture a new specialty known as the Top-O'-Tub, which is a combined baby's bath and dressing table.

The Hespeler Wood Specialty Co., Limited, Hespeler, Ont., are building a two storey brick addition to their plant to handle the increased demand for their lines. The new unit is 60 x 126 feet and will cost $28,000. Z. A. Hall, company manager, expects to have the new unit completed by July 1st.

Herbert Paint and Varnish Co., Limited, at Calgary, Alta., with a capital of $100,000 recently started operations in the manufacture of a full line of paints, stains, enamels, polishes, and other similar products. W. R. Herbert, head of the new company, was for many years sales manager of the British American Paint Co., Limited, Victoria. The company is not yet manufacturing varnishes, but are acting as agents for the Flint Varnish & Color Works, Limited.

Bridgewater Lumber Co., Limited, Quebec, P.Q., was recently granted a provincial charter to manufacture and deal in all kinds of wood products. Capital $100,000.

The Fuller Brush Co., of Hamilton, Ont., have been registered in Saskatchewan.

Stanley & Bunting, Limited, 135 King St. E., Toronto, is a new firm recently organized to manufacture and deal in automobiles, boats, flying machines, farm implements and other similar products. Capital $100,000. John Bridge and George Henry Pelton, manufacturers, both of London, Ont., are two of the incorporators.

The St. John Dry Dock and Shipbuilding Co., East St. John, N.B., have awarded contracts for the erection of an office and fabrication shop. The latter will be 200 x 200 feet and one storey high.

The Bridgewater Lumber Co., of Quebec City, are installing an exhaust system for the collection of shavings and sawdust supplied by the Anderson-Barwick Co. of Montreal.

The recent report appearing in the daily papers announcing that the Columbia Graphaphone Co., Dufferin St., Toronto, was disposing of the cabinet making branch of their business is incorrect. On the contrary the Columbia people expect to make extensions to this department. They have, however, sold their dictaphone business to an American firm, but this does not effect the local market as no dictaphones were made in Canada.

Frank Rounds, Welland, Ont., recently sold his lumber business to Robt. W. Rogers.

J. P. Dupuis, Limited, Montreal, have received the contract for the millwork of the new Kenogami mill of Price Brothers, Quebec.

The Oliver Machinery Co., Grand Rapids, Mich., manufacturers of woodworking machinery have completed arrangements for the Canadian Fairbanks Morse Co., Limited, to represent them exclusively in Canada for the sale of their machinery.

Louis Labric at Matane, P.Q., will start work shortly on the rebuilding of his sash and door factory. The new building will be of wood construction, two storeys and 50 x 70 feet in dimension.

Fire recently destroyed the sash and door factory of C. Thibault at St. Simon, P.Q. The loss is estimated at $15,000, but the owner expects to rebuild.

Blais & Frere, lumber merchants and planing mill, Cap de La Madeleine, P.Q., are about to start work on a new dry kiln at a cost of $2,500. The building will be 14 x 20 feet and of solid brick construction.

The Kroehler Mfg. Co., Ontario St., Stratford, Ont., have started work on a new storehouse. The building will be of sheet metal construction and the dimensions are 44 x 105 feet.

H. W. Petrie, president of the firm H. W. Petrie, Limited, Torondto, dealers of machinery and engines, died recently.

Twisswire Brushes, Limited, Toronto, was recently granted a provincial charter to manufacture and deal in all kinds of twisted-in-wire brushes and mops. Capital $40,000.

Ontario Motor Sales, Limited, Oshawa, Ont., is a new company, recently incorporated to manufacture and deal in motor trucks, boats, flying machines and other vehicles. Capital $90,000.

Fire recently destroyed the paint factory of the Canadian Oil Company located at the foot of Strachan Ave., Toronto. The estimated loss of building and contents is $35,000 which is fully covered by insurance. The company have been greatly inconvenienced by the fire especially at this time of the year. They are able, however, to handle the business offering through the kind help of their friends in the trade. The firm expect to rebuild.

The Builders Moulding Co., 52 Noble St., Toronto, have lately installed a No. 108 10-inch moulder supplied by P. B. Yates Machine Co.

The New France Lumber Co., Ltd., Westfield, N. B. with a capital of $99,000 has been organized to manufacture al kinds of wood products. Harry Schofield of Rothesay, and G. A. Hilyard of St. John, N.B., are two of the principals.

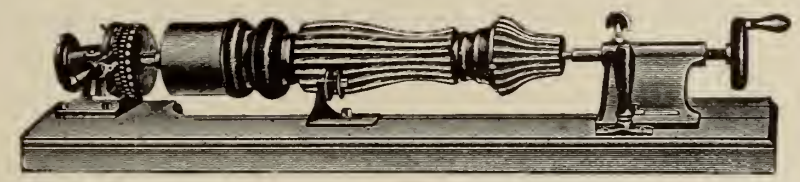
Longlois & Gouin, Limited, Victoriaville, P.Q., has recently been organized to take over the business of Langlois & Gouin, Reg. at Victoriaville, and to manufacture and deal in sash, doors, floorings and other wood products. Capital $18,000. H. Langlois and A. Gouin, both of Victoriaville are two of the incorporators.

The box factory of the Summerland Lumber Co., Summerland, B.C., is approaching completion and will soon be in operation. Machinery arrived at the beginning of May and the work of erection was put in hand without delay.

The many friends of Thomas H. Hancock, head of the woodworking firm T. H. Hancock, Limited, Toronto, will

FLUTING HEADS

Shaper Attachment



For fluting Table Legs, Chair Legs, Bed Posts, Columns, Balusters, etc. Swings any diameter up to 8" and may be extended to any length. Spaces automatically number 1 to 48. Ask for circulars of Fluting Heads, Twist Machine and Twist Sander.

THE SHAWVER CO., SPRINGFIELD, O.

Canadian Representative:
The A. R. Williams Machinery Co., 64-66 Front St. West, Toronto

Guard Your Plant Against FIRE!

The
"Automatic" SPRINKLER

Gives Complete Protection

Cuts the Cost of Insurance

The inflammable nature of the materials in your plant makes the danger from fire doubly great. Are you adequately protected? The Automatic Sprinkler System stands on guard day and night It stops the fire before it can do damage for the action is automatic—the water starts when the fire starts.

There is an additional saving to you in the lowered cost of insurance. Let us go over the cost of installation with you. There is no obligation involved.

The Bennett & Wright Co.

Limited ——— Contractors
72 Queen Street East TORONTO
Western Ontario Branch
77 King Street London

Bond POWER TRANSMISSION

comprises

Hangers with Babbitt, Ball or Roller Bearings
Pillow Blocks
Flat Boxes
Mule Stands, Wall Boxes, Spiro Compression Couplings, Clamp Couplings.
Plate and Sleeve Couplings
Cast Iron Pulleys
Solid and Split Collars
in fact everything
for transmitting Power in Woodworking establishments.
also
Bond Ball Bearing Truck Casters.

For High Speed Machines use the Bond Ball Bearing Loose Pulley. Used extensively on High-Class Woodworking Machinery, it has given the utmost satisfaction. Catalog 38 cw sent on request.

BOND ENGINEERING WORKS,

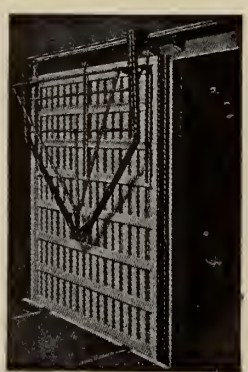
Villiers and Munition Sts. **Limited**
TORONTO

REEDS WASTE LINTERS

Let us quote you on your requirements

E. T. CARTER & CO.,
9 FRONT ST., E. ——— TORONTO

The Door Carrier System



Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.
Ask for catalogue.

DRY KILN DOOR CARRIER CO.
1117 Cornell Ave.
INDIANAPOLIS, IND.

sympathize with him in the death of his father, who died recently. The late Mr. Hancock was a builder and architect and was 78 years of age.

H. L. Hebard has been appointed chief inspector for the National Hardwood Lumber Association, of Montreal, and has entered upon his new duties. Mr. Hebard was formerly connected with the inspection staff at Toronto and has many friends in the trade. His assistant in Montreal is R. L. Orr.

Alex. Dick, who was for several years manager of the Alfred McDonald Lumber Co., Peterboro, has formed the Dick-Carew Lumber Co., Limited, with headquarters in Peterboro. The authorized capital stock is $50,000. The members, besides Mr. Dick, are Frank J. Carew, Lindsay; J. W. Meyers, president, Peterboro Cereal Co., Peterboro; George W. Hatton, County Crown Attorney, Peterboro, and Dr. Graham McDougall, Peterboro. The company has secured premises on Bethune St., between Murray and McDonnell, and will have an up-to-date woodworking plant as well as the facilities for manufacturing sash and doors, boxes, hardwood flooring, etc. The members of the firm are widely known to the trade and expect to have the business running full blast early this month.

Friends of T. E. Rathbone, of George Rathbone, Limited, Toronto, will be sorry to hear that he has lost the sight of his right eye which was caused by the bursting of a blood vessel.

A new planing mill was recently added to the plant of W. H. Longfield & Bros., Mount Brydges, Ont. The new unit is a fine brick building standing on a lot 70 x 90 feet and houses modern machinery for the manufacture of sash and doors, etc.

The Sutherland, Innes Co., Limited, Chatham, Ont., manufacturers of staves, hoops, heading, etc., report that cooperage stock prices better and the demand for stock increasing. A clean up of all stocks carried over from last year is expected. Unfortunately for export to the old country, they say their business is done through southern ports as Montreal rates of freight are 40% higher than from U.S. ports.

A new woodworking industry has recently been formed at Woodstock, N.B., by S. C. Heckbert. The company will manufacture toboggans, shoe fly rockers, etc. An order for two thousand toboggans in addition to other lines was received from T. Eaton Company, of Toronto, recently. Mr. Heckbert was one of the heavy losers by the recent flood which swept away a large quantity of white ash.

Fire originating in the paint shop of the Elder Carriage Works, 26 Soho St., Toronto, recently caused $1,000 damage to the building and $1,000 to the contents.

The Satin Finish Hardwood Flooring Co. at Weston, Ont., are installing a small compartment progressive dry kiln supplied by the National Dry Kiln Company of Indianapolis. The new unit is 52′ in length and is equipped with a National Moistal system for increasing drying production.

Jas. T. Gilchrist Lumber Co., Limited, 496 Gladstone Ave., Toronto, whose mill was burned several months ago are about to start work on a new mill building. It will cover a ground space of 50 ft. x 80 ft. and will be of brick and steel construction.

Fire recently destroyed the plant of the Oakville Wirebound Box Co. Limited, Oakville, Ont., causing an estimated loss of $225,000. Valuable box making machinery was destroyed and comprised the chief loss. The unfortunate loss occurred at the opening of the famous Oakville berrying season. A half a million strawberry baskets intended for the crop and 250,000 cherry baskets were consumed. The company expect to care for business on hand through their Burlington, Ont., factory.

Among the new industries which have recently located at Cooksville, Ont., are the woodworking plant and sash and door factory of John Harper & Sons, of Toronto. Mr. Harper has just finished an attractive new home in the village.

Standard Planing Mills, Metcalf St., North Bay, Ont., are erecting a new one storey office building the dimensions of which are 28 x 36 feet.

Fire recently destroyed the sash and door factory of Wilfrid Lafrance at St. Eugene, Que. No insurance was carried.

A very sad accident occurred recently when Harold P. Porter, assistant manager of Sanderson Pearcy Co., Limited, finishing room jobbers at Toronto, was found dead in the garage adjoining his home by his wife. Mr. Porter had been working on his motor car with the garage doors closed and his death is supposed to have been due to carbon monoxide fumes.

Fire recently destroyed the planing mill and residence of Wilfrid Lafrance at Rigaud, P.Q. The loss is estimated at $15,000 and is partly covered by insurance.

The Fletcher Lumber Co., Howard Ave., Windsor, Ont., formerly owned by the Haugh Lumber Co., and whose planing mill was burned recently are contemplating erecting a new one at a cost of $35,000.

Canadian Brush Co., 5 McCaul St., Toronto, have assigned.

La Compagnie d'Osier, Limited, Montreal, is a new firm recently incorporated to manufacture osiery and other similar furniture. Capital $149,000. Among the incorporators are Major R. La Roque and R. A. Beauvais, both of Montreal.

Municipal Wagon Company, Limited, Atlantic Ave., Toronto, was recently formed to manufacture and deal in wagons, trailers, carts and other vehicles. Capital $50,000.

General Auto Body Co., 483 Bleury St. (in rear), Montreal was recently registered. J. I. Laliberte is the proprietor.

C. L. Rymal & Sons, Ltd., 19 Mary St., Hamilton, Ont., was recently incorporated to take over the business of C. L. Rymal & Son and to manufacture and deal in pianos and other musical instruments.

Export Opportunities

A Liverpool firm asks for quotations on broom handles in carload lots. For further information write the editor referring to enquiry 1637.

A Liverpool firm asks for quotations on birch and maple dowels in carload lots. Further information in possession of the editor. Refer to enquiry 1638.

A Belgian firm would be glad to receive prices, illustrations and specifications of standard Canadian Douglas fir doors. For further information write the editor referring to enquiry 1639.

A manufacturers' agent in London, claiming a good connection both among the home and re-export trade, wishes to secure agencies for Canadian manufacturers of domestic woodenware. Further information in possession of the editor. Refer to enquiry 1641.

The Canada Machinery Corporation, Galt, Ont., recently supplied a very fine battery of machines for the Hourd Mfg. Co., of London, Ont.

The Sidman Lumber Curing Process

IN

Either Wood, Brick or Concrete Building.

Fillers and glazes to preserve the building.

The TAG-ROESCH **Automatic** Time-Temperature and **Humidity Controller.**

Three-ply and Du-o-fold Army Duck Curtains, and Hussey Door Carrier Doors.

Automatic Heating, Ventilating and Humidity Systems for Varnish Rooms.

Reducing and Back Pressure Valves, Oil and Grease Extractors.

Sidmans AUTOMATIC **Suction System** for returning ALL Condensation DIRECT to the Boiler.

Cantilever Steam Traps and other Steam Specialties.

Active and Non-Down Draught Vent Heads for all purposes.

Cleanable Screen Panel and Window Ventilators.

Roller Bearing (Ott) **Channel Iron** Car Bunks and Transfer Cars.

Thermostats, Recording Gauges, and The Sidman Special Hygrometers.

For Description and prices, write

The

Sidmans of Canada

Heating and Ventilating Engineers and Lumber Curing Specialists

LONDON **ONTARIO**

"Well Bought is Half Sold"

Adaptable for Many Uses

WHITE PINE

Smooth, Red-Knotted, Dry

20 M′	3 x 4 & 5	—10 & up	
75 M′	3 x 6		"
75 M′	3 x 7		"
60 M′	3 x 8		"
40 M′	3 x 9		"
25 M′	3 x 10		"
35 M′	3 x 11 & up		"

Attractive Prices

Canadian General Lumber

Company Limited

FOREST PRODUCTS

TORONTO OFFICE:—712-20 Bank of Hamilton Building

Montreal Office:—514 Canada Cement Company Building

Mills: Byng Inlet, Ont.

General Woodworking Trade Mart

Quick Action Section

Equipment Materials Employment

Save Money

On lumber purchases by keeping posted on lumber market published every week in Lumber recognized authority of the Industry, $5.00 per year. Sample copy on request. Lumber 435 Columbia Bldg., St. Louis, Mo., U.S.A. 6-7.

Your Factory Engineer

Should receive twice monthly a magazine that will tell him how to eliminate electrical troubles in the factory and show him how to cut your power costs. The ELECTRICAL NEWS is published for the benefit of users of electricity and contains valuable information for all factory superintendents who use electric power. $2.00 per year of 24 issues. Write to 349 Adelaide Street, West, Toronto. 6-t.f.

For Sale
The Following Machinery

All guaranteed in A1 condition. One extra heavy Defiance bender, one 8' Preston steam retort (new), one Goldie & McCulloch double spindle shaper, one McGregor Gourlay double spindle shaper. SOUTHAMPTON PLYWOOD WORKS LIMITED, SOUTHAMPTON, ONT. 6.-9.

GOOD VALUES
of
Rebuilt Machines in Stock

Band rip saw, Fay & Egan No. 180.
Circular sawmill, Hoosier Pony.
Circular resaw, 30 in. and 44 in.
Dowel Machine, Clement.
Dowel Gluer and driver, E. B. Hayes.
Jointers 12", 16", 24".
Lathe, back knife, Clement 40".
Matcher, Woods No. 403 double profiler.
Matcher, Woods 15" No. 401.
Matcher, American No. 229 hardwood.
Moulder, Woods 10 and 12" inside.
Moulder, American 7" and 10" 4 side.
Planers, all sizes, single and double.
Rubbing machines, Moore.
Sander, endless bed 48" H. B. Smith.
Sander, Moore Machine Co. Belt.
Sanders, Berlin 36" 42", 48" and 60".
Sander, Clement belt roller table.

Woodworking Machinery Co., of Buffalo,
54 Mechanic St.,
Buffalo, N.Y.
6 T.f.

Used Machinery For Sale

Having installed larger machines, we are offering a 74" Veneer Lathe, can be seen daliy in operation, 37" Model "E" Francis Glue Spreader for waterproof glue, 6, 38", 4 Screw Iron Veneer Presses. Hay & Company, Limited, Woodstock, Ontario. 4-7

Woodworking Machinery Bargains

24" Planer & Matcher, C.M.C. No. 112.
30" Double Surfacer, C.M.C. No. 212. round cylinders
16" Buzz Planer.
12" Heavy Moulder, Cowan 152.
6" Moulder, three side, Clark-Demill.
Shaper, double spindle.
Chain Saw Mortiser, Cowan 236.
Sash and Door Relisher, Cowan.
Post Borer.
Wood Lathe, 20" swing.
Band Resaw, 54" wheels, 5" saw.
Band Saw, 34" wheels.
Rip Saw, heavy tilting arbor.
Rip Saw, plain.
Combination Saw and Dado.
Arm Sander.
Door Clamp.
Nailers, 4, 6 and 8 channel.
Screw Driver, No. 3 Reynolds.

Box. 158, Canadian Woodworker, or Phone North 3121, Toronto, Ont.
6

Machinery for Sale

1 Baxter D. Whitney, 36" Planer, section feed roll,
1 Baxter D. Whitney, 12" Jointer,
1 Smith 30" Jointer, with Billstrom Self-Feed Attachment,
1 Dodds, 12 Spindle, Dovetail Machine,
1 No. 2½ American Shaper, 2 Spindle,
1 Glue Press 12-0 x 4-0, in 7 sections,
1 Yates 43" Endless bed Sander,
1 C.M.C. Continuous feed Jointer,
1 Oliver Variety Saw,
1 Cowan 10" Moulder,
1 Cowan Hollow Chisel Mortiser,
1 C.M.C. No. 611 Straight Edging Saw,
1 Fisher Variety Sander,
1 Cowan Sand Drum; 2 Drums and Disc,
1 Cowan Tenoner; double cope and saw,
Also a number of other machines, pulleys, shafting, etc. In fact, all our factory equipment, as our factory is being dismantled.

The Charles Rogers & Sons Co., Ltd.,
6 McDonnell Square, Toronto.

Structural Engineering

The distinction between civil and military engineering has frequently been pointed out, and no one with any pretensions to a knowledge of the engineering profession has any excuse for failure to realize that the institution of Civil Engineers represents civil as distinct from military engineering, and is not in any way exclusively concerned with dock and harbor construction and similar work of the class which is usually referred to as civil. The Institution of Civil Engineers, which was founded in 1818, is the great parent institution which represents every type of non-military engineering activity. Its roll of members and its proceedings carry clear evidence of the wide scope of its interests. Since its founding other great, but specialized institutions have grown up, making no attempt to compete with the catholicity of the parent body, but concerning themselves with someone branch of work. The chief of these are the Institutions of Mechanical Engineers, Naval Architects and Electrical Engineers. These each deal into which the whole field covered by the Institution of Civil Engineers may be divided. A branch of work already dealt with by the Institution of Civil Engineers, but which so far has not been taken up by any specialized institution of the standing of the Institution of the Mechanical and Electrical Engineers, or the Institution of Naval Architects is that of structural engineering, but the newly formed Institution of Structural Engineers evidently hopes to occupy this position. This body, in its original form of the Concrete Institute, dates from 1908, but it can hardly yet claim to standing and prestige which will put it on a level with the other leading specialized institutions. Its particular line of work, however, lies in an important field which is possibly large enough to carry an institution of its own, and there gven wise management and the maintenance of a good standard of membership, there is no reason why the Institution of Structural Engineers should not, in due course take its place alongside the other leading specialized bodies. The first presidential address of the new institution, which was delivered by Mr. E. Flander Etchells, in the hall of the Institution of Civil Engineers on the 19th instant certainly set a good standard. In view of the special nature of the occasion, Mr. Ttchells naturally dealt with the formation of the body he represents. His address was a remarkable sketch of the growth of engineering institutions and associations from the earliest times, and showed that even in the dawn of history the builders, surveyors and artificers who were the engineers of those days, tended to band together in crafts and associations. Doubtless the bodies of an earlier day had a more political or trades union aspect than the professional institutions with which we are familiar, but Mr. Etchells' address none the less established a line of continuity between the new body and the early guilds.

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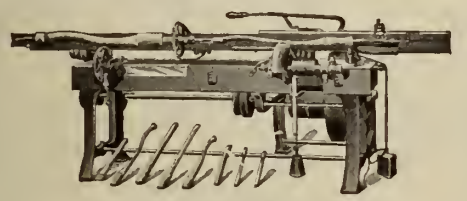
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

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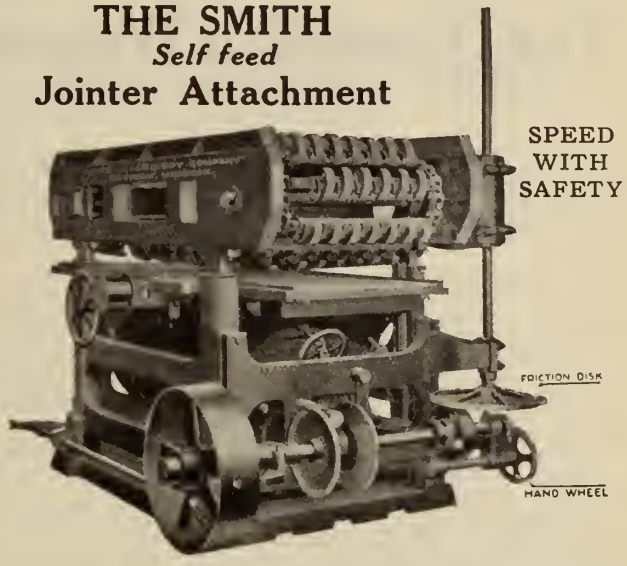

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We will make this attachment to fit any standard jointer or will furnish jointer and attachment complete.

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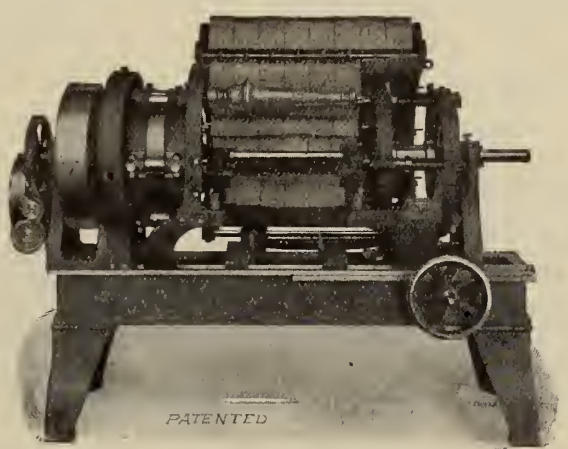

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Let me give you details as to capacity, etc., of the Sander and you can then figure the saving for yourself.

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Toronto Blower Co., Toronto, Ont.

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Fay & Egan Co., J. A. Cincinnati, Ohio.
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CASTINGS
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Smart-Turner Machine Co., Hamilton, Ont.

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Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Black Bros. Co., Mendola, Ill.
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Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Sons Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company,
Superior Hand Saw and Clamp Co., Grand Rapids, Mich.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

CLAMP CARRIERS
Black Bros. Co., Mendota, Ill.
Taylor Mfg. Co., Poughkeepsie, N.Y.

CLUTCHES
Bond Engineering Works, Toronto, Ont.

COATED ABRASIVES
Herman Behr & Co., Inc., Brooklyn, N.Y.

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Carter, E. T., Toronto, Ont.

COTTONWOOD PANELS
Rathbone, Geo. Ltd., Toronto, Ont.

CROSS-CUT, MITRE AND RIP SAWING MACHINE
Mackenzie Machinery Co., D. Guelph, Ont.

CUT OFF SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Co., of Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Shimer Cutter Head Co., Galt, Ont..
Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.

DOORS
Pannill Door Co. Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

DOORS (Flush Veneered)
Pannill Door Co. Ltd., Toronto, Ont.
Hay & Co. Ltd., Woodstock, Ont.

DOORS (Fir)
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Eaton & Sons J. R. Orillia, Ont..
Pannill Door Co., Toronto, Ont.

DOOR CARRIERS FOR DRY KILNS
Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES
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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Wylie & Co., Matthew Glasgow, Scotland

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company,
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Co. Preston, Ont.

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Canada Wood Specialty Co. Ltd., Orillia, Ont.
Eaton & Sons, J. R. Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont.
Cutler Desk Co., Buffalo, N. Y.
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National Dry Kiln Co., Indianapolis, Ind.
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Standard Dry Kiln Co., Indianapolis, Ind.
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DUST COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.

EDGERS (Single Saw)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

EDGER SAWS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

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ELECTRICAL EQUIPMENT
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Lancashire Dynamo & Motor Co., Toronto,

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Denny Hillborn & Rosenbach, Chicago, Ill.

END MATCHING MACHINES
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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

EXHAUST HEADS
Sturtevant, B. F. & Co., Galt, Ont.

EXHAUST SYSTEMS
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Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

FEED ROLLS
Atkins & Co., E. C. Hamilton, Ont.

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Walter, John & Sons Limited, Kitchener, Ont

FIR DIMENSION
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FIRE ALARM SYSTEMS
Northern Electric Co., Montreal, Que.

FLOORING MACHINES
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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
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Chagrin Falls, O., U.S.A.

"Canadian Woodworker" Buyers' Directory—Continued

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Canada Glue Co., Brantford, Ont.

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GLUE
Casein Manufacturing Co., New York City
Dunn Co., of Canada, Thomas W. Montreal
Canada Glue Co., Brantford, Ont.
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.
Sanderson Pearcy & Co., Toronto, Ont.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

GLUE HEATERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE JOINTERS
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUED STOCK
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Fay & Egan Co., J. A. Cincinnati. Ohio.
Simonds Canada Saw Co., Montreal, P.Q.

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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GROOVERS
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Shurly-Dietrich, Galt, Ont.

GROOVING HEADS
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Fay & Egan Co., J. A. Cincinnati. Ohio.
Mattison Machine Works, Rochford, Ill.

GUM LUMBER
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Hyde Lumber Company, South Bend, Ind.
Merceau-Hawkins Tie Co., Huntington, W. Va.
Sondheimer Co., E., Sondheimer, La.

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Fay & Egan Co., J. A. Cincinnati. Ohio.
Superior Hand Saw and Clamp Co., Grand Rapids, Mich.

HANGARS
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Dodge Mfg. Co., of Canada Ltd., Toronto. Ont.

HANDLE & SPOKE MACHINERY
Fay & Egan Co., J. A. Cincinnati. Ohio.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Nash, J. M., Milwaukee, Wis.

HARDWARE
National Hardware Co., Orillia, Ont.
Larsen & Shaw Ltd., Walkerton, Ont.

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Bedna Young Lumber Co., Jackson, Tenn.
Banning, Leland G., Cincinnati, Ohio.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
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Toronto Blower Co., Toronto, Ont.

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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith Machinery Co., Saginaw, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
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Shimer Cutter Head Co., of Can. Ltd., Galt.
Simonds Canada Saw Co., Montreal, P.Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNOBS
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LACQUERS
Cosmos Chemical Co., Port Hope, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Klotz Machine Co., Sanducky, Ohio.
Mattison Machine Works, Rochford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

LEGS
Klise Manufacturing Co., Grand Rapids, Mich.

LUMBER DRY KILNS
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Nichols Company, A. S. New York, N.Y.

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Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
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Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

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Toronto Blower Co., Toronto, Ont.

MITRE SAWS
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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS
Sturtevant, B. F. & Co., Galt, Ont.

MOTORS
Lancashire Dynamo & Motor Co., Toronto,
Northern Electric Co., Montreal, Que.
Sturtevant, B. F. & Co., Galt, Ont.

MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

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Fay & Egan Co., J. A. Cincinnati. Ohio.
Nash, J. M., Milwaukee, Wis.

NAILING MACHINES
Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

OAK FLOORING
Rathbone, Geo. Ltd., Toronto, Ont.

PAINT
Marietta Paint & Color Co., Marietta, Ohio.
Sanderson Pearcy & Co., Toronto, Ont.

PAINT DRYERS
Sanderson Pearcy & Co., Toronto, Ont.
Nichols Company, A. S. New York, N.Y.

PANELS
Calhoun Plywood Co., Sheboyan, Wis.
Hay & Co., Woodstock, Ont.
Pannill Door Co. Ltd., Toronto, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PATTERNS PINE
Rathbone, Geo. Ltd., Toronto, Ont.

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Two Examples of Berkey & Gay Workmanship

Master Finishers at the Berkey & Gay Plant Use Carborundum Brand Garnet Paper and Cloth

THE name Berkey & Gay is always associated with the distinctively beautiful because in design, quality and workmanship Berkey & Gay furniture is the product of the artistry of master craftsmen.

In the creation of such furniture finish is an all-important factor. That is why many of the skilled sanders in this plant use Carborundum Brand Garnet Paper and Cloth—clean cutting, uniformly coated, flexible products that can be depended on to uphold the standards of good workmanship.

Carborundum Brand Garnet Products make good sanders better sanders.

The Carborundum Company

Niagara Falls, N. Y. U.S.A.

New York, Boston, Chicago, Cleveland, Detroit, Cincinnati, Philadelphia, Pittsburgh, Milwaukee, Grand Rapids

"Canadian Woodworker" Buyers' Directory—Continued

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Toronto Blower Co., Toronto, Ont.
Williams Machinery Co., A. R. Toronto, Ont. Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corporation, New London. Wis.
Calhoun Plywood Co., Sheboygan, Wis.
Guelph Patent Cask Co., Scotstown, P. Q.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

POWER APPARATUS
Northern Electric Co., Montreal, Que.

POWER & LIGHT PLANTS
Fischman Spring Co., Kitchener, Ont.

POWER TRANSMISSION MACHINERY
Bond Engineering Works, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

PULLEYS
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PUMPS—Condensation and Return
Canadian Blower & Forge Co., Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

RATTANS
Carter, E. T., Toronto, Ont.

REEDS
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RETORTS
Perfection Wood Steaming Retort Co.,

REVERSIBLE PLANING MILL FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FOLLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Wylie & Co., Matthew Glasgow, Scotland
Yates Machine Co., P. B., Hamilton, Ont.

SANDPAPER
Behr & Co., Herman, Brooklyn, N. Y.
Canada Glue Co., Brantford, Ont.
Carborundum Co., Niagara Falls, N.Y.
Sanderson Pearcy & Co., Toronto, Ont.

SASH DIMENSION
Pannill Door Co., Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW SHARPENERS
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
Cowan & Company, Galt, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

SHAFTING
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.
Bond Engineering Works, Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

SHELLAC
International Varnish Co., Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

SOFTWOODS
Big Bear Lumber Co., Toronto, Ont.
Canadian General Lumber Co., Toronto, Ont.
Rathbone, Geo., Limited, Toronto, Ont.
Hall Bros. Ltd., Toronto, Ont.
Heeney, Percy E. Kitchener, Ont.
Luehrman Hardwood Lumber Co. Chas. F., St. Louis, Mo.
Terry-Nicholson-Cates Ltd., Toronto, Ont.

SPRINGS
Ideal Fence & Spring Co., Windsor Ont.

SPRING MATTRESSES
Fischman Spring Co., Kitchener, Ont.

SPRING CONSTRUCTION
Fischman Spring Co., Kitchener, Ont.

SPRUCE DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM & OIL SEPARATORS AND REFINERS
Smart-Turner Machine Co., Hamilton, Ont.

STEEL BALLS
Canadian SKF Co., Toronto, Ont.

STEEL PLATE PLANING MILL EXHAUST
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

STEEL PRESSURE BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE RIMS
Bruce Woodworkers Limited, Chesley, Ont.

TABLE SLIDES
Bruce Woodworkers Limited, Chesley, Ont.
Watertown Table Slide Co., Watertown, Wis.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Pettingell Machine Co., Amesbury, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Calhoun Plywood Co., Sheboygan, Wis.
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
National Dry Kiln Co., Indianapolis, Ind.
Shantz, P. E. Preston, Ont.

TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

The manufacturer who makes the article is helpless without the merchant who makes the market

Reach your market through "Canadian Woodworker"

The "JORGENSEN" Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws

The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."

"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

Manufactured only by the

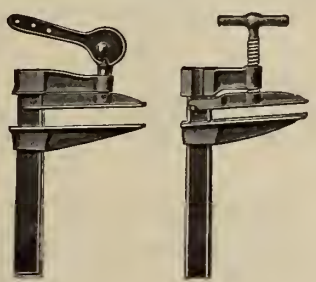
Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

For Sale By

Aikenhead Hardware Limited .....Toronto
Lewis Bros., Limited .....Montreal

Colt's Clamps for the Woodworker



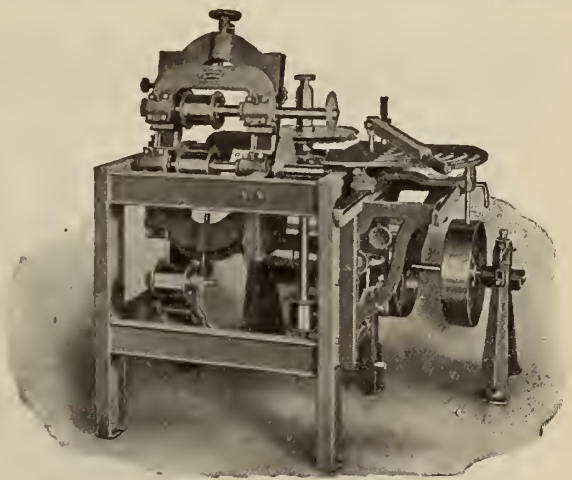
Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.



No. 19 Saw Tenoner
No. 20 Large Saw Tenoner

Fitted with five saws, has replaced cutter head machines; for all jointing and halving in wood shops and for automobile and carriage wood-work it is the best machine on the market.

Much door, window, sash, furniture and cabinet work is done with this machine where a nice, smooth tenon is required. It is also used for the halving and jointing of stock at any angle.

Tenoners equipped with flexible coupling for direct motor drive or for countershaft.

No. 19 Small Saw Tenoner.
No. 20 Large Saw Tenoner.
No. 21 Regular Bevel Saw.
No. 22 Large Bevel Saw.
No. 23 8½ Irregular Dresser.
No. 24 6" Irregular Dresser.

We also manufacture metal working machines.

Write for catalogue

Pettingell Machine Co.

Amesbury, Mass.

Mention Canadian Woodworker

"Canadian Woodworker" Buyers' Directory—Continued

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

TURNED WOOD GOODS
Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TURPENTINE
Brown Corporation, Quebec, P.Q.
Carter, E. T., Toronto, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

TWIST WORK
Klise Manufacturing Co., Grand Rapids, Mich.

UPHOLSTERING FELTS
Canada Wool Stock Company, Toronto, Ont.

UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

VACUUM PUMPS
Canadian Blower & Forge Co., Kitchener, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

VARNISH
International Varnish Co., Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio
Sanderson Percy & Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Acme Veneer & Lumber Co., Cincinnati, O.
American Plywood Corporation New London, Wis.
Guelph Patent Cask Co., Scotstown, P. Q.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Nickey Bros., Memphis, Tenn.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Pickrel Veneer Co., New Albany, Ind.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER DRYERS
Nichols Company, A. S. New York, N.Y.

VENEER SAWS
Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin, William R. Ltd.
Preston Woodworking Machinery Company, Preston, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WALLBOARD
Ontario Gypsum Co., Paris, Ont.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Sawmill Co., Des Moines, Iowa.
Maus Lumber Co., Chas. O. South Bend, Ind.
Pickrel Walnut Company, St. Louis.
Sullivan, Frank T., Buffalo, N. Y.

WASTE
Carter, E. T., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Pettingell Machine Co., Amesbury, Mass.

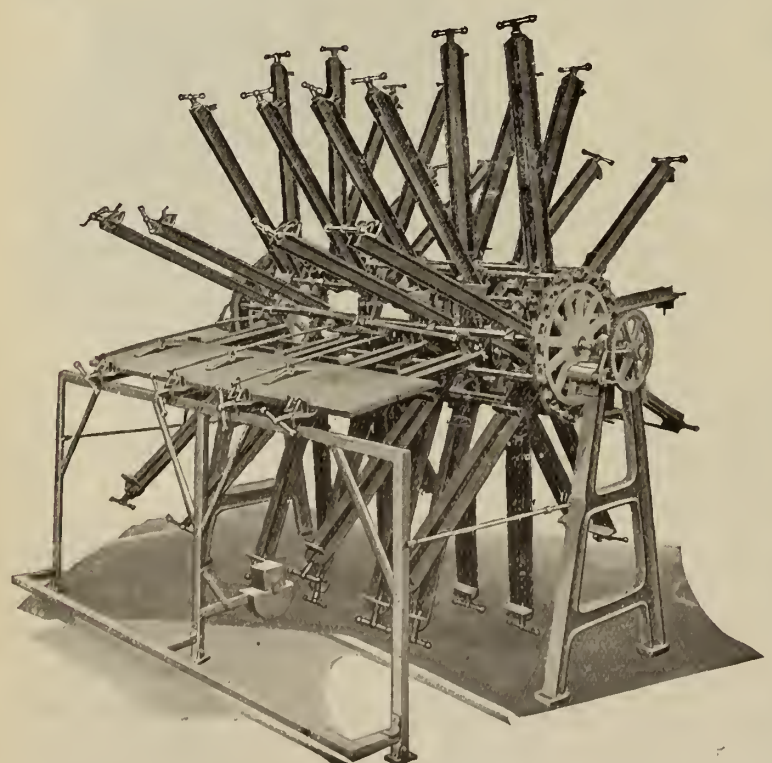
WOOD STEAM RETORTS
Perfection Wood Steaming Retort Co., Parkersburg, W. Va

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.

Speed + Perfect Joints = Low Costs



The Taylor TRADE MARK

CLAMP CARRIER
for
Small Jobs in the Big Plant
All Jobs in the Little Plant

1. Natural standing position of operator.
2. No Juggling of heavy clamps.
3. No bending or walking.
4. No pile to overturn to get work glued first—simply move clamp one section.
5. Less space than equal number of clamps with work in, piled on the floor.

Any size to suit your work. 8 and 12-section wheel type. 16, 20, 30 and 40-section chain type. 4, 5 or 6 clamps per section for stock up to 42-in. wide.

Representatives:
A. R. Williams Machinery Co., Toronto. Canada

James L. Taylor Mfg. Company
Poughkeepsie, N.Y., U.S.A.

1 3/4" Veneered Door Sections

Ready to Machine

One Panel—Quarter Cut White Oak	$12.25
" " —Plain Red Oak	10.25
" " —Selected Red Gum	9.75
" " —Birch	9.25

Stiles 5" x 6-10 1/8 Veneer 2 Siles—One Edge Banded.
Top Rail 5" x 2-6 Veneer 2 Sides.
Bottom Rail 10" x 2-6 Veneer 2 Sides.
Panels 3/8 x 25 x 5-8 Good 2 Sides, Sanded 2 Sides 5 Ply.

For your rush orders, we carry a large stock at your disposal

George Rathbone Ltd.

Northcote Ave., Toronto

ATKINS

STERLING QUALITY

SAWS and KNIVES

ECONOMIZE

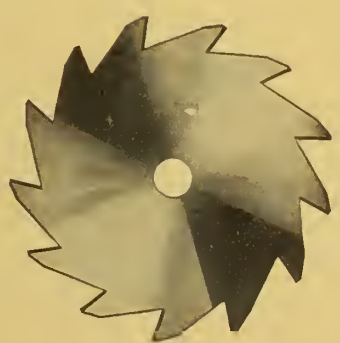
ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing

Atkins Sterling Quality Saws

and Machine Knives

Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.

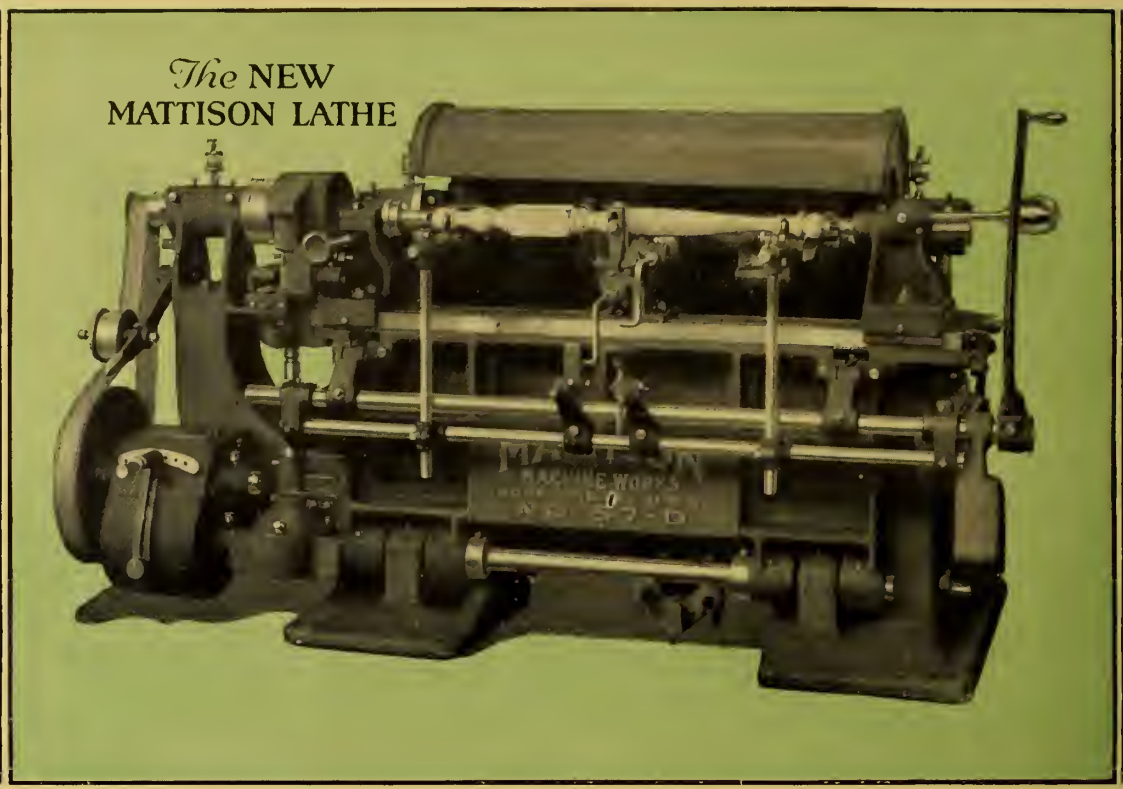
Write to-day for our Knife Booklet "C.W." and Pattern Template Paper.



E.C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**



A New Model to Meet Today's Conditions

WHEN you call in your designer to create new patterns, are you able to let him "go the limit" in producing artistic and attractive turnings? Or must you caution him to avoid certain features of ornamentation because you lack turning equipment capable of reproducing them accurately and economically?

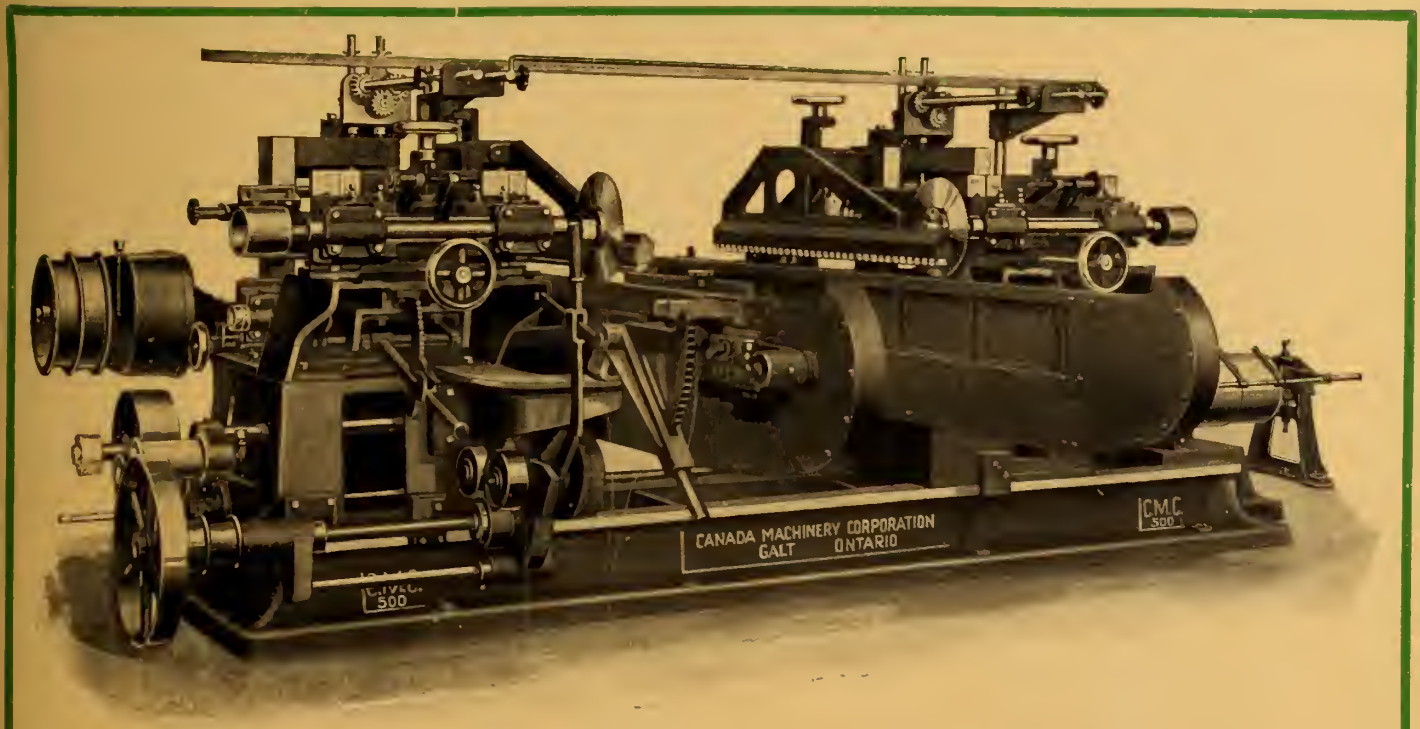
Individuality of design, together with reasonable price, are two important elements in the sales campaigns of today.

Manufacturers are replacing their old-style machines with the New Model "D" Mattison Automatic Shaping Lathe, because it is more flexible, has greater capacity, is easier and faster to operate, and does better work—features which not only insure true reproduction of your designer's creations, but provide a lower manufacturing cost.

Even though you have a turning machine, you should know about this improved and refined Model D Mattison Automatic Shaping Lathe. Send for your copy of illustrated descriptive bulletin.

MATTISON
MACHINE WORKS
Rockford, Illinois, U.S.A.

CANADIAN
WOODWORKER
and
Furniture Manufacturer



C.M.C.

"The Guarantee of Quality"

THE No. 500 Double End Tenoner cuts costs, increases output and improves the quality. Leading furniture factories of Ontario vouch for the truth of this statement.

Continuous operation is not essential. Even the savings accomplished by part time operation will pay handsome dividends. It is also unexcelled for plain cutting off, dadoing, grooving, etc.

Full particulars on request.

CANADA MACHINERY CORPORATION
LIMITED

GALT — ONTARIO

Manufacturers of Iron and Woodworking Machine Tools

Toronto Sales Office - - - 721 Bank of Hamilton Bldg.

Alphabetical Index to Advertisers, Page 12

There is One—Always

In every kind of business, there is one concern that leads—in quality, in volume, in standing—because it has proved the worth of its product and service—to the trade.

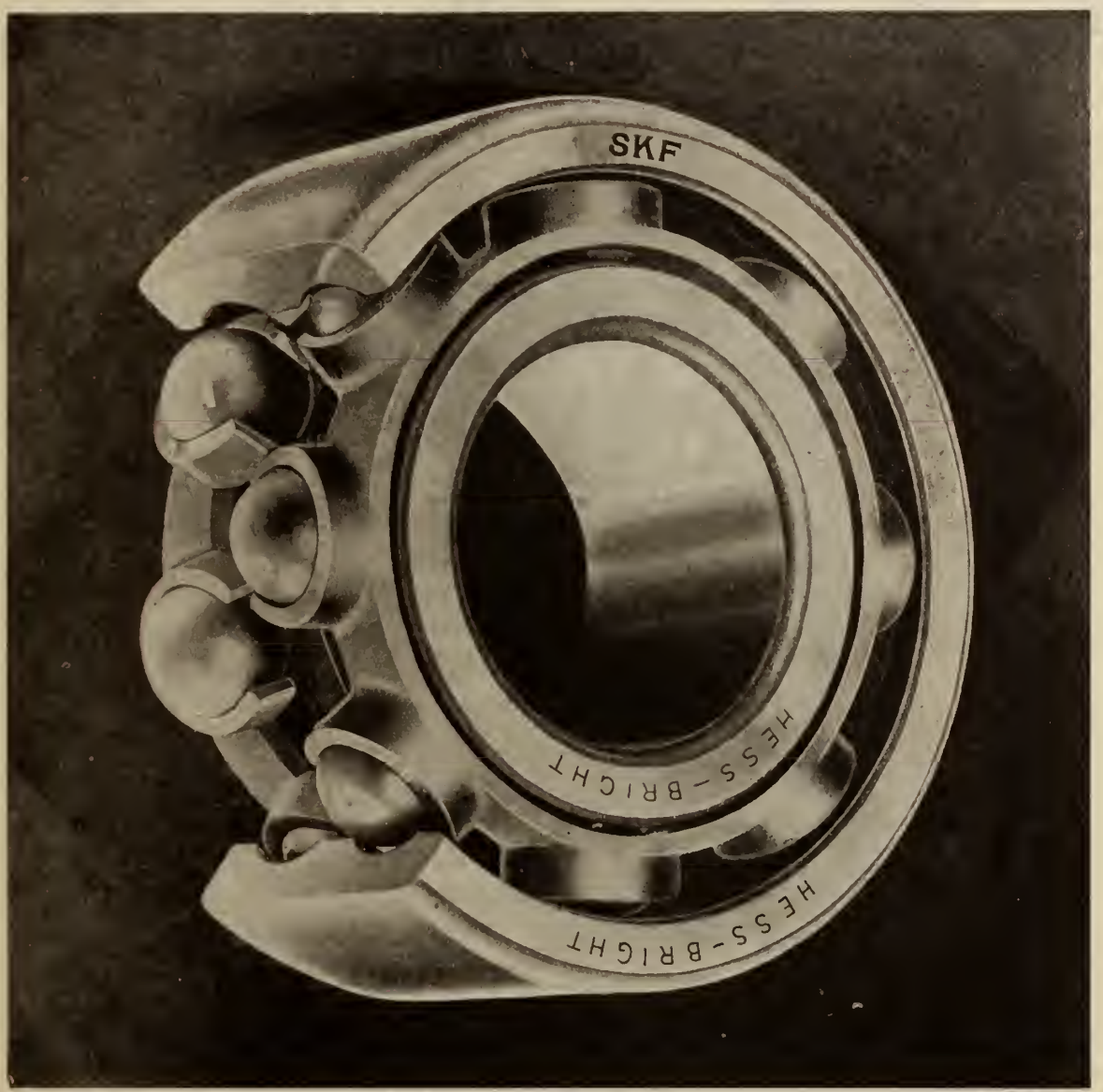
In the production of Alcohol for industrial purposes—we have won such undisputed national leadership. Isn't this fact a good buying guide?

Your enquiries are as welcome as your orders.

Canadian Industrial Alcohol Co.,
Limited
MONTREAL

Manufacturers of
MAPLE LEAF BRAND
Ethyl Alcohol-Cologne Spirits-Absolute Alcohol, B.P.
Methylated Spirits and Denatured Alcohol (all formulae)

Distributing Warehouses
Montreal-Toronto-Winnipeg-Vancouver-



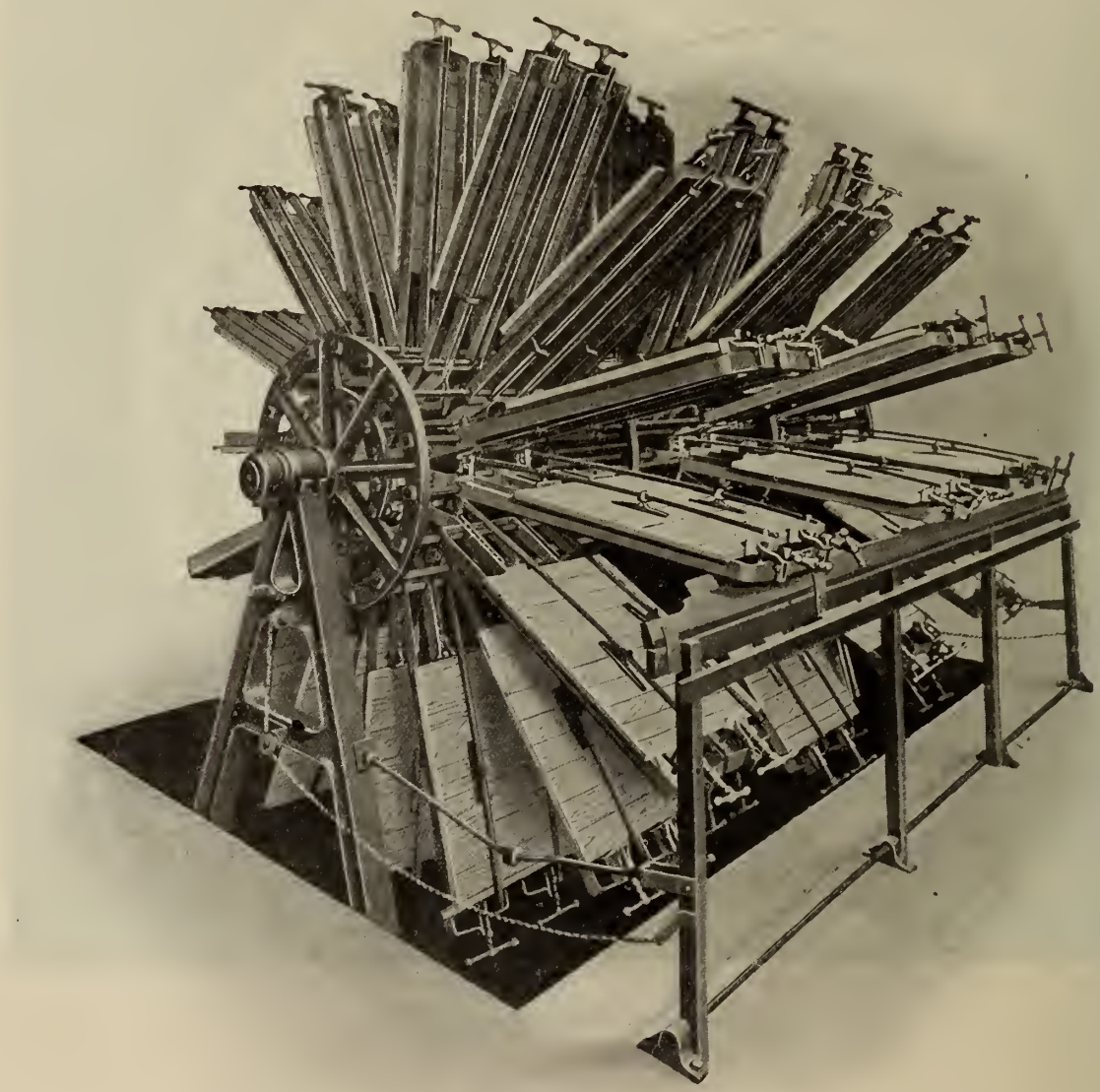
Double row, rigid, deep grooved bearing. Double radial and 75 per cent. greater thrust capacity over same size single row bearing. Most scientifically constructed bearing of its kind obtainable.

CANADIAN SKF COMPANY, LIMITED
TORONTO — MONTREAL

The

No. 200 Perpetual Revolving Clamp

for Simplicity of Operation



Wonderfully simple in operation is the No. 200 Perpetual Revolving Clamp. Its efficiency marks its use as practically indispensable for increased output of the better kind of work. For chair seats, furniture, dimension stock, school desks, refrigerator ends, special shapes, etc., it is without equal. It takes in 2½" in thickness up to 40" wide and 14' long. Many features of this machine will interest and please you. Write us for further particulars regarding this and many other machines that will assist for greater output.

Jackson, Cochrane & Company

KITCHENER, : : CANADA

JUST A LINE ABOUT

WOODWORKING MACHINERY

"The Lightning" Line
TRADE MARK REG.

J. A. Fay & Egan Company

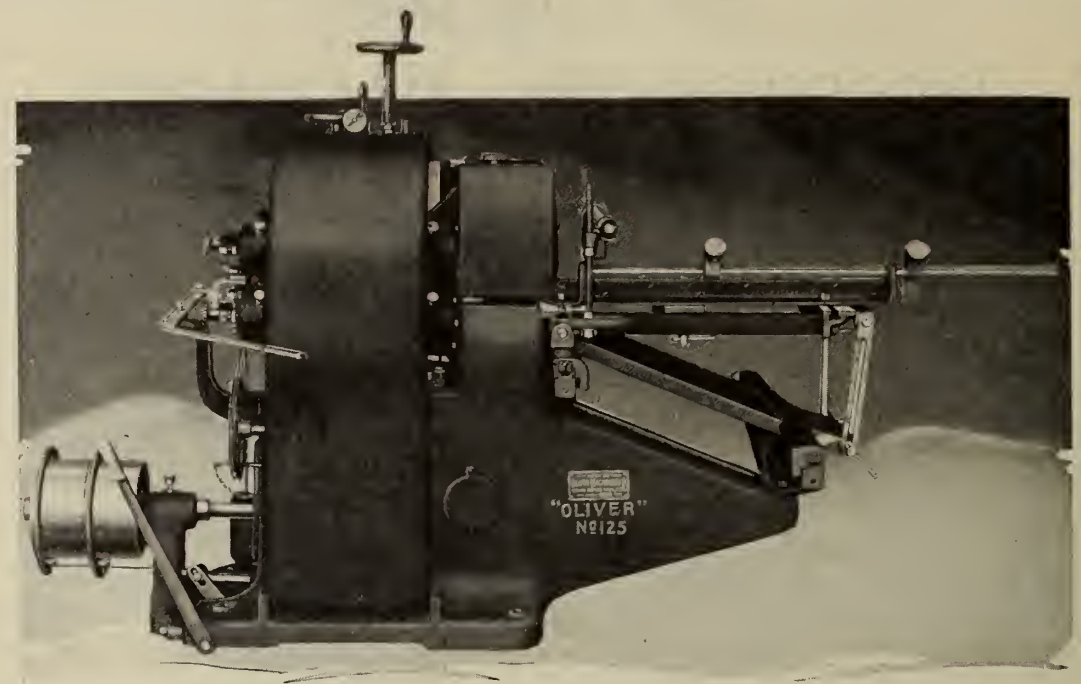
ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

2705-2805 Robertson Ave. (Oakley) Cincinnati, Ohio, U.S.A.

Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.
Branches: Montreal, St. John, N. B., Winnipeg, Vancouver

SKF



Ball Bearings Make Possible
The Highest Grade Woodworking

THERE was a time when a planing mill could get by with pretty rough work. But now that users of wood products demand the highest grade of machine work, necessity requires the use of bearings which will maintain a uniformly high quality product.

In this single-end tenoner, the use of deep-groove ball bearings, made by the Hess-Bright Manufacturing Company, in the tenon head, cope head, saw arbor, idler pulleys and table, contributes much to its ability to turn out a highly uniform product even though the stock handled be wide, thick and long.

Not only do deep-groove ball bearings support heavy loads at high speeds but they do so without measurable wear, thus eliminating spindle chatter which is the cause of much poor work.

Wherever maintained accuracy is a paramount requisite, accurately made ball bearings best meet this requirement.

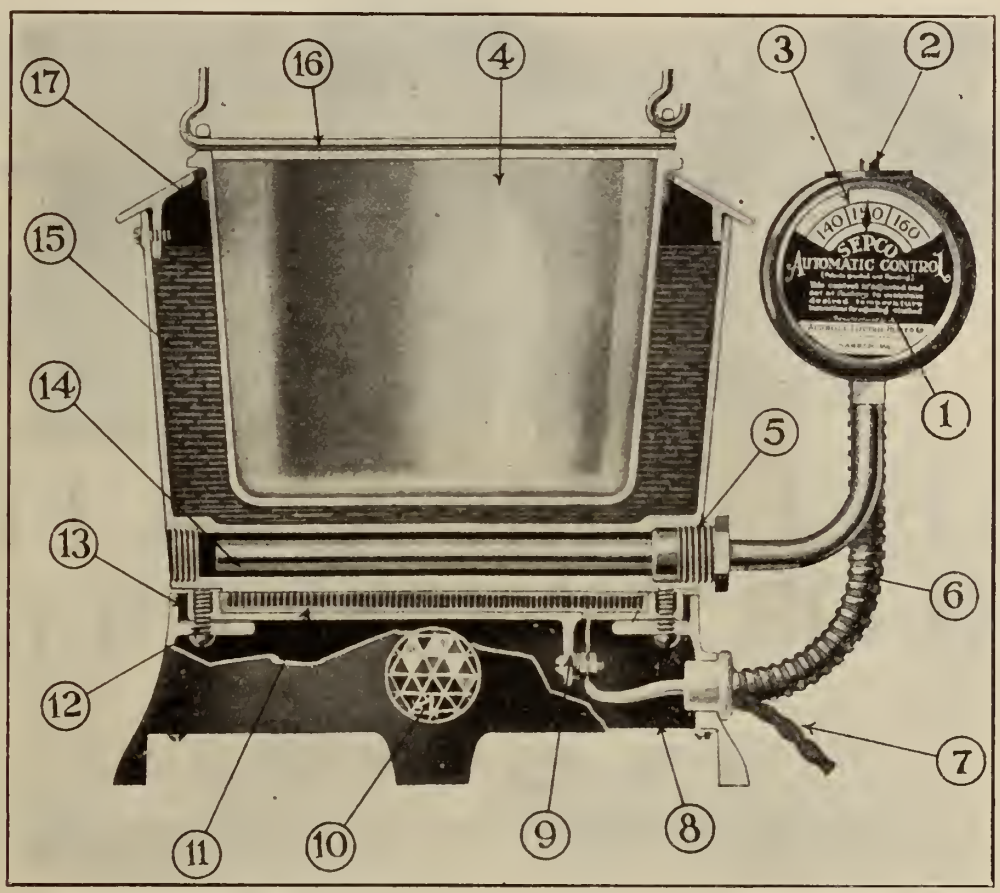
CANADIAN SKF COMPANY, LIMITED
TORONTO — MONTREAL

Races displaced to show DEEP-GROOVE bearing carrying maximum end thrust in a forward direction.

Races displaced to show THE SAME bearing carrying maximum thrust in reverse direction.

·SEPCO·

"Glue should be maintained at 140 to 150 degrees Fahrenheit, to secure its maximum tensile strength."—United States Bureau of Standards



Construction Details of Sepco Automatic Electric Glue Pot

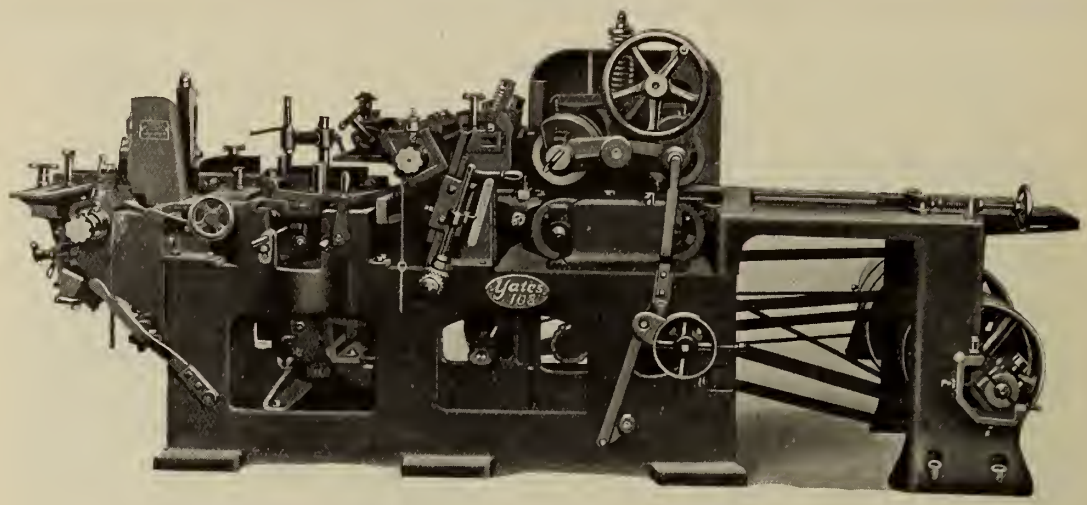
NEAT, simple and sturdy design characterizes the Sepco Automatic Electric Glue Pot. Every detail has been studied with view to producing an appliance which will give continuous, economical, satisfactory service under severe shop conditions. The more thoroughly you examine Sepco, the more convinced you will be that this appliance meets every practical requirement. Please study these specfications in detail.

1. Sepco Automatic Control is infallible—a simple, rugged instrument which operates with positive certainty under all conditions.
2. Adjusting Screw enables the operator to set the control at any desired temperature.
3. Indicating Pointer tells the temperature of the pot at all times.
4. Aluminum Glue Container is cast, not spun —therefor of great durability and holds its heat.
5. Lug Bushing easily removable, holds the sensitive tube of Sepco Controller in the glue pot casting.
6. Metal Cable safely connects heating unit with Sepco Control in accordance with Underwriters' specifications.
7. Heater Cord is heavy duty, high grade (Cost 1c to operate per 8-hour day). asbestos covered connector, six feet long, equipped with plug.
8. Base Cover provides dead air heat insulation chamber between Sepco heating unit and bench.
9. Bus Bar is an integral part of the casting which holds the heating unit, insuring rigid electrical connection.
10. Pilot Light (first used by Sepco) indicates when current is on and reminds operator to switch off current when pot is not in use.
11. Sepco Heating Unit of special alloy imbedded in our dielectric plastic cement, is practically indestructible. The Sepco design gives even heat, perfect thermal contact, and the highest attainable efficiency due to elimination of heat losses through conduction.
12. Element Screws attach the Sepco heating unit to four heat-insulated lugs which prevent loss of heat by conduction and provide quick and simple method of unit replacement.
13. Air Gap surrounding heating unit provides additional heat insulation between unit and base casting.
14. Sensitive Tube of Sepco Controller is directly above the heating element and is part of the glue pot shell. The volatile substance in this tube is very sensitive; it expands and contracts with every slight change of temperature, and provides an absolutely dependable automatic action of ample power to actuate the control switch without relays or other complications.
15. Water Bath in the Sepco pot is optional; the control operates with equal positiveness and accuracy whether Sepco is used as a water bath or dry heat pot.
16. Brush Wiper is part of the bail, running across the centre of the pot and eliminating overflow and dripping.
17. Retainer Lugs hold the glue container in place, preventing floating when the pot is only partly filled and minimizing the escape of moisture.

SEPCO AUTOMATIC
ELECTRIC HEATERS, LIMITED
47 Richmond St. E. Toronto, Ont.

·SEPCO·

Yates



A RELIABLE AND FINE PERFORMING MOULDER

The exceedingly wonderful prestige of this moulder is evidenced best by investigating mills throughout the world and seeing the hundreds and hundreds of machines bearing the Yates 108 name-plate.

Surely there is something in Yates 108 which accounts for this remarkably high standing. To follow a 108 during construction is a revelation. Examine any big feature or any small detail. Even the coiled springs on the chipbreaker are special-made; they allow each section of the chipbreaker to yield, yet afford an even bearing across the bed plate upon stock of irregular thickness.

Comparison of Yates No. 108 with any other moulder will demonstrate its superiority. More than likely you will install the 108 when in the market for this kind of equipment.

P. B. Yates Machine Co. Ltd.
HAMILTON — ONTARIO
WORLD'S LARGEST MANUFACTURERS OF WOODWORKING MACHINERY

GLUES
for Jointing
GLUES
for Veneering
GLUES
for Every Purpose

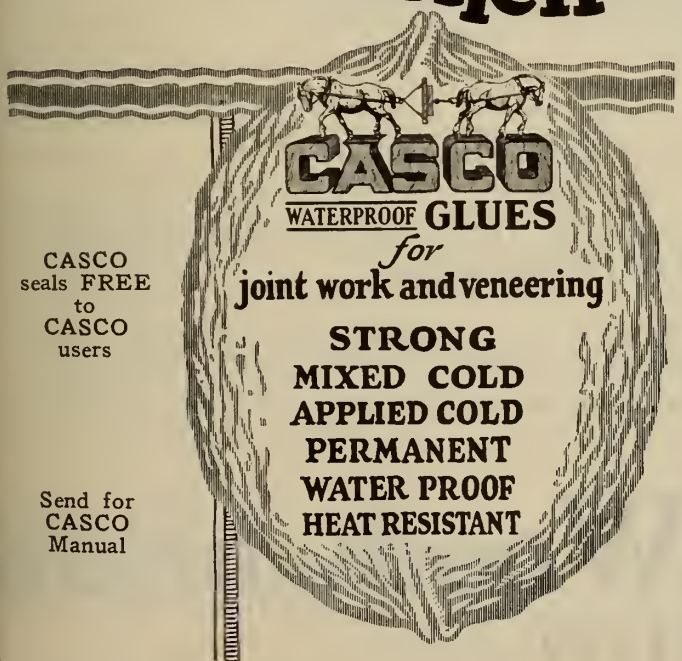
MADE IN CANADA
by

Canada Glue Co., Ltd.

Brantford **Ontario**

BRANCH OFFICES:
117 Queen St., Montreal, P.Q.
27 Wellington St. East, Toronto, Ont.
Sutherland Bros. Confederation Life Bldg., Winnipeg
A. T. Chambers, Dominion Bldg., Vancouver.

In a Nutshell-



CASCO seals FREE to CASCO users

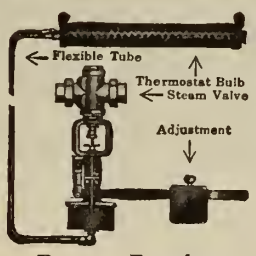
Send for CASCO Manual

THE CASEIN MANUFACTURING CO.
Largest Manufacturers of Casein Products in America
15 PARK ROW **NEW YORK**
Branch Offices in Principal Cities

Green Wood Real Money

Every load of wood that comes to your kilns to-day represents real money. Every load of wood that leaves your kilns represents more money. When you are obliged to reject lumber that has become case-hardened, warped, or checked in the drying process—you're losing money.

Prevent these losses by maintaining a constant, unvarying temperature in your drying kilns. Powers Regulation will do it—**at a profit.** Your lumber will always be evenly and thoroughly cured, without warping, checking, etc. You will save fuel by using only necessary heat. You will save labor by releasing men from watching thermometers and valves.



Powers Regulator No. 15

Especially adapted for control of air temperatures. Automatic, simple in operation, and easily installed.

Powers Regulators will regulate your profits upwards. Thousands of satisfied users have proved this. Let us send you proof.

Write for our 30 day free test offer.

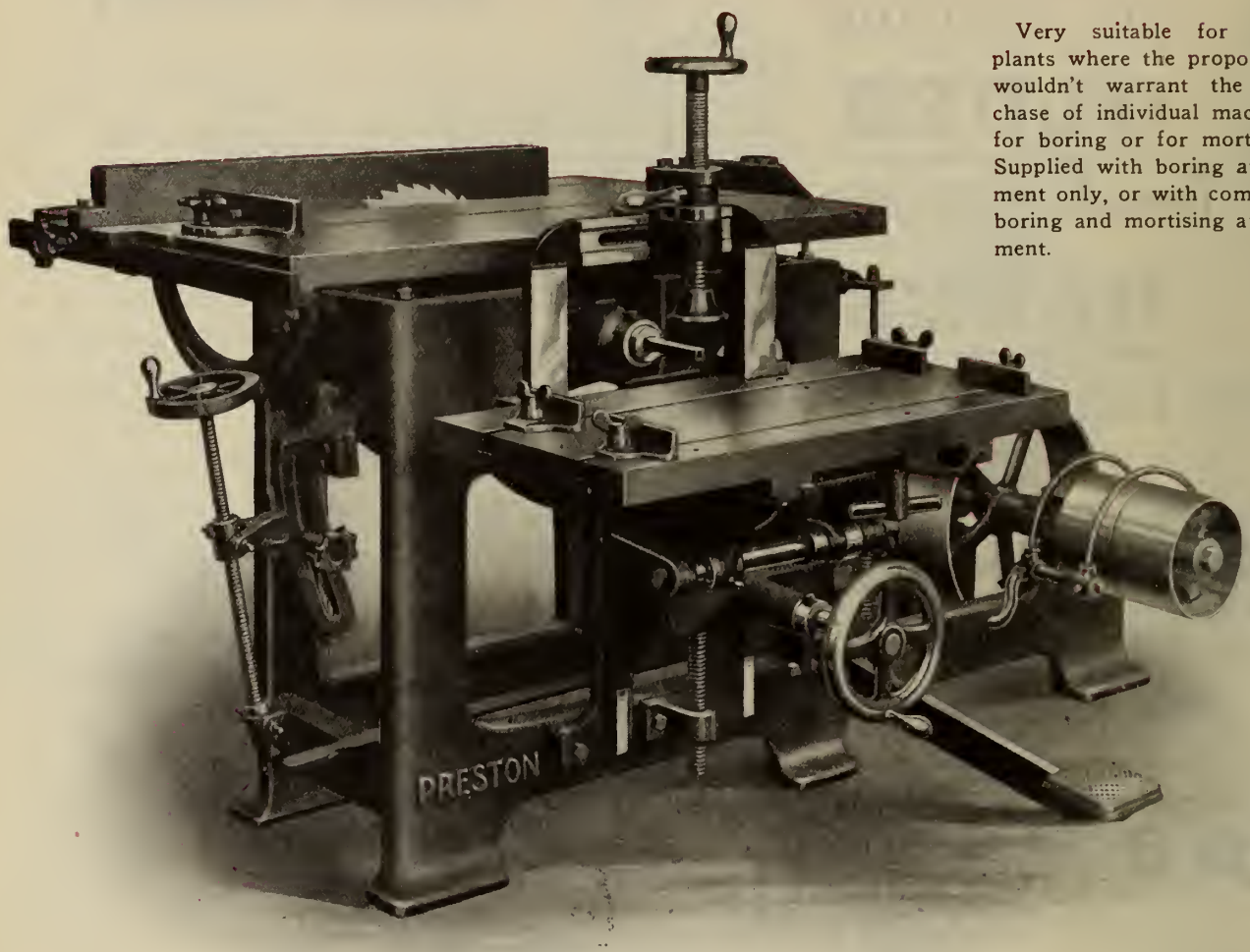
The Canadian POWERS REGULATOR Co. Ltd
Specialists in Automatic Heat Control
106 Lombard Street — Toronto, Ont.

Calgary, Alta. Halifax, N.S. Montreal, Que.
Vancouver, B.C. Winnipeg, Man.

Please consult your telephone directory for local address.

(2288)

No. 125 "Preston" Variety Tilting Top Saw Table with Boring and Mortising Attachment



Very suitable for small plants where the proposition wouldn't warrant the purchase of individual machines for boring or for mortising. Supplied with boring attachment only, or with combined boring and mortising attachment.

"THE PROOF OF A PUDDING IS IN THE EATING"

Likewise we feel that

"SATISFACTORY PROOF OF THE QUALITY OF ANY WOODWORKING MACHINE CAN ONLY LIE IN THE USING"

Having this in mind, our strictly defined sales policy is that "A sale is not completed until the customer has absolute satisfaction from a machine of ours" and "until it lives up to every claim for it."

We mention this that absolute confidence may be in the minds of customers who consider placing orders with us.

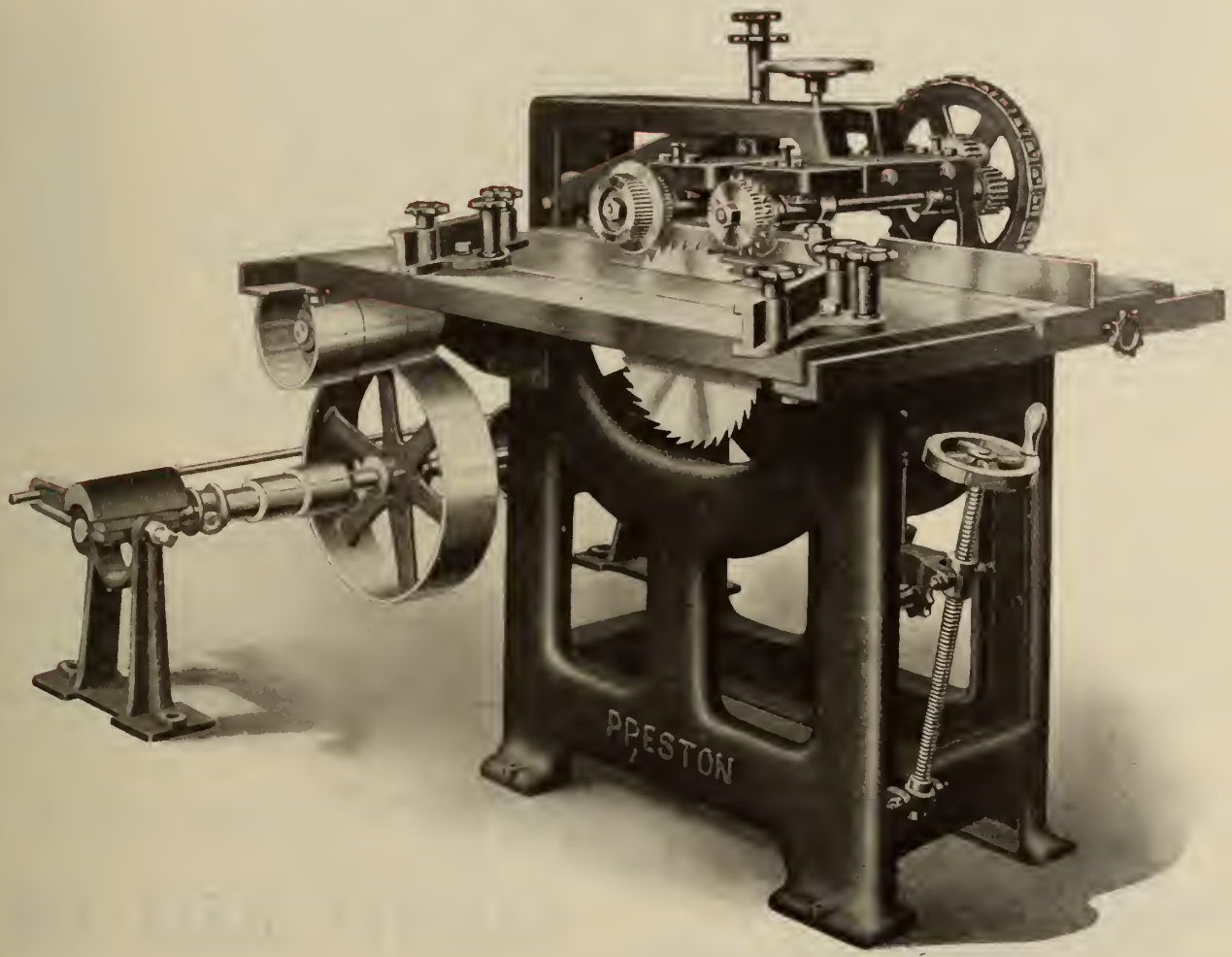
The Preston Woodworking

PRESTON,

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

No. 125 "Preston" Saw Table

with Special Power Feed Attachment



The above arrangement was designed by us for light accurate ripping particularly on short stock. The Power Feed has a capacity up to 10″ wide x 2″ thick.

The upper works will swing back clear out of the way for doing hand work. It has 3 rates of Feed.

It is equipped with S.K.F. Ball Bearings. It has a stationary table. The frame is one solid casting. The arbor raises and lowers. It will take saws up to 16″ diameter.

Any plant which has a variety of very short stock would find this machine a very profitable investment at a very moderate cost.

Machinery Company, Ltd.

ONTARIO

Specialists in Ball Bearing Woodworking Machinery

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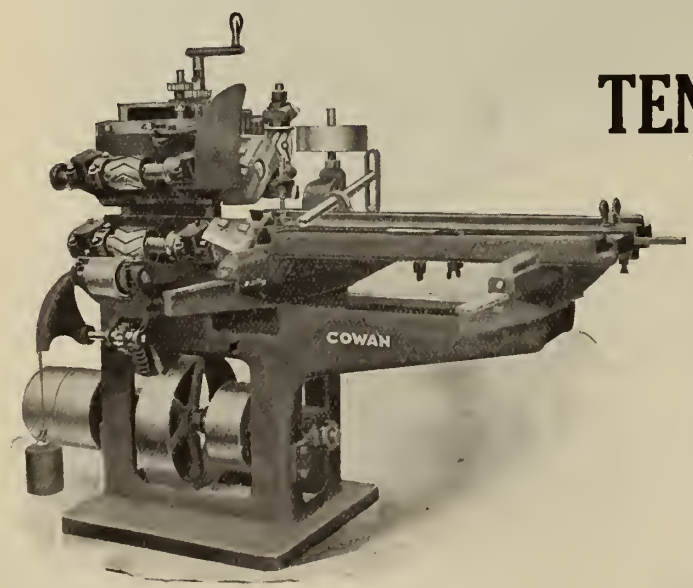


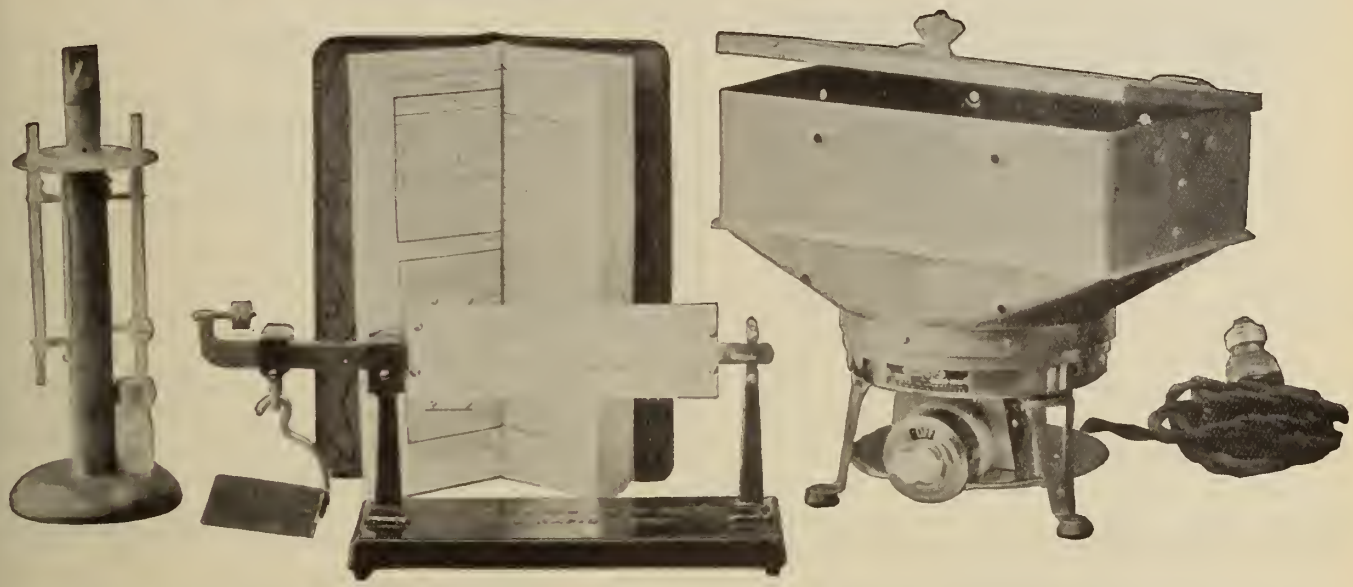
TENONER 224—
BABBITT BALL OR
ROLLER BEARINGS

Simple, Substantial, Accurate.
Convenient of Adjustment.
Ample Belt Power; Light Running.
The Easiest Operated Tenoner made.

Cowan Wood Tools Satisfy

COWAN & COMPANY OF GALT LIMITED
Galt Ontario Canada

SENT ON APPROVAL



Let us send you, for your examination and approval, this set of valuable recording and testing instruments.

Experience has shown that 95 per cent of the concerns reporting trouble with their kilns are those in which proper records are not maintained. This set of recording and testing devices reduces the chance of error and saves time. In many instances through the proper keeping of these records we have been able to show the customer how to save 10 per cent. in drying time, 10 per cent in steam consumption and to reduce waste or degrade by a much greater percentage.

GRAND RAPIDS VAPOR KILN

Recent Installations

Grand Rapids Vapor Kilns have recently been installed in the following Plants:

American Car & Foundry Co. Chicago,
Hale Company .....Arlington, Vt.
Gravois Plg. Mill Co. ....St. Louis, Mo.
Southern Coffin & Casket Co. .....
Marysville, Tenn.
York Body Co. .....York, Pa.
Colonial Furn. Co., ..Grand Rapids, Mich.
L. Barth & Son .....Kingston, N. Y.
Strangman Mfg. Co. ..Newtonville, Mass.

The instruments above are the Linnodeik, a wet and dry bulb thermometer for determining the relative humidity. The right hand tube is enclosed in a wick to obtain wet bulb readings.

Next is the Computing Scale or Lumber Tester to weigh samples for determining moisture content. Instead of the usual graduated beam a chart is etched on the beam enabling the direct reading of moisture content percentages.

Behind the Computing Scale is the Kiln Records Book, a system devised for the purpose of keeping the operator constantly informed as to his kiln operation, and assures him of a prompt analysis of any difficulty.

The instrument to the right is an Electric Heater and oven to reduce small samples to absolute dryness.

SEND FOR BOOKLETS

Send today for the Grand Rapids Vapor Kiln booklets which describe in detail the functioning of these instruments, and cover practically every phase of wood curing problems.

GRAND RAPIDS VAPOR KILN

Main Office and Factory: Grand Rapids, Michigan
ENGINEERS—MANUFACTURERS—CONTRACTORS

Represented on the Pacific Coast by
E. F. TINDOLPH, 5539 White Henry-Stuart Bldg., Seattle, Wash.
FOREIGN OFFICES:

Boorman & Boorman, Sydney, Australia
A. R. Williams Machinery Co. St. John, N.B.
The Oliver Machinery Co. Manchester, England
Hampe & Hartwig Hamburg, Germany

Where are values to-day?

The insurance of your property is a matter of grave importance. It can be made on an economical, safe basis —if you have a Canadian Appraisal —or it can be the reverse, if you use book values, old appraisals, or an estimate of present worth.

Insurance protects values, not property. If you don't know exactly what those values are now, there is no possible means of insuring them safely or economically. This is a service in which we are eminently fitted to serve you.

The Canadian Appraisal Co. Limited

364 University St., MONTREAL

TORONTO Royal Bank Bldg.

NEW YORK Equitable Bldg.

4000 Trucks

Ordered by

The Mengel Co.

as well as a battery of Standard Dry Kilns for their Louisville plant.

Because

they had us send actual trucks as samples—they tried them in actual service along with other makes—their conclusion was that The Standard Truck was the best one to use.

Get our circular on trucks and accessories—see why men who investigate place their orders here.

Address us:
1542 McCarthy St., Indianapolis, Ind.

The STANDARD Dry Kiln Co.

Cross Sectional View of Planer Knife. Shaded portion indicates the High Speed Steel Edge "welded" to the face of the knife.

Users of Ordinary Thick Knives Can Now, by the Simonds New Method of "Welding" Obtain the Same Cutting Efficiency that Users of thin High Speed Steel Knives Secure

It has been an accepted theory that high speed steel knives could not be welded. Yet here it is by the new Simonds process welded to a soft metal backing. This allows us to heat treat the knives to bring out the utmost in cutting efficiency. Old style high speed steel knives cannot be heat treated because the braze will come apart like any other soldered article. Welded knives do not come apart. They give longer service and last longer. We can now furnish these "welded" high speed steel knives for Spoke, Moulding, Lathe, Chair, Jointer and Planer Knives up to 30 inches long. We know of no other knife manufacturer that can supply these welded knives. The price is the same as for the ordinary brazed high speed steel knife. Book your orders now.

Simonds Canada Saw Co., Ltd.

Montreal, Que.

St. John, N.B. **Vancouver, B.C.**

New and Used Woodworking Machinery

We can save you money—look over our partial list and if you do not see your requirements—Write, wire or phone us.

Shaving Exhausters
50" American Blower Co., 16" Outlet.
45" American Blower Double.
No. 1 Buffalo.

Moulders
7" 4 Sided Goldie McCullough.
7" 3 Sided Cowan & Co.
12" 4 Sided Cowan & Co.

Shapers
Combination Jig Saw and Shaper Elliot.
2 Spindle Shaper.

Planers & Matchers
24" Major Harper Poney Planer.
30 x 12" McGregor Gourlay Double Surfacer.
12" Buzz Planer.
14" Planer and Matcher.

Mortisers
Power Stroke Mortiser Cowan & Co.

Band Saws
20" Crescent Band Saw.
28" Elliot Band Saw.

Trim Saws
Variety Trim Saw.

Agents for Elliot Woodworkers.

GENERAL MACHINERY CO.
67-69 Frederick St., TORONTO
TELEPHONE MAIN 2200W

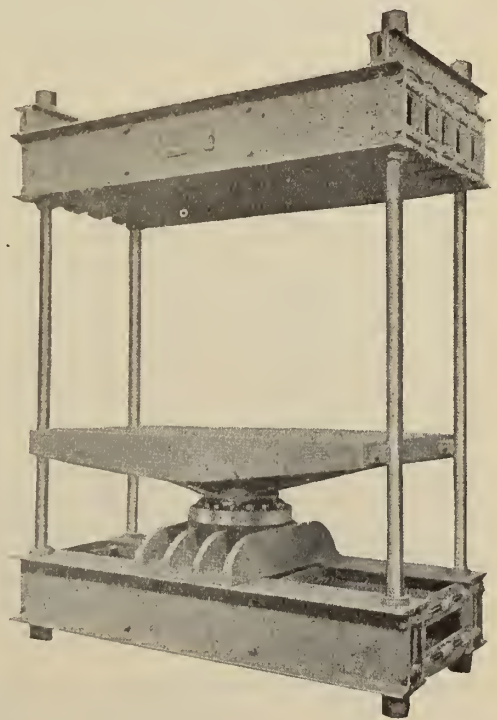
Built for the Job — Why Pay More

The Williams Buzz Planer or Jointer
(Made in Canada)

A sturdy well designed, well built Tool, heavy enough to handle the majority of work in the Planing Mill, Furniture Factory, Sash and Door Plant and General Repair Shop. Equipped with round safety cylinder and guard. Write for illustrated bulletin and full description.

The A. R. WILLIAMS MACHINERY CO., LTD.
Established 1878
Phone Adelaide 20
64-66 Front St., West, Toronto
HALIFAX, N.S. ST. JOHN, N.B. MONTREAL, P.Q. TORONTO, Ont.
WINNIPEG, Man. VANCOUVER, B.C.

What Others Say About the PERRIN HYDRAULIC VENEER PRESS



"has increased our output four times"
"gives a better product under easier working conditions"
"turns out more work in less time"
"almost impossible to get along without it"

And Here are Some of the Firms Who Say It

Hay & Co.
Peppler Bros. Co., Ltd.
Knechtel Furniture Co.
Globe Wernicke Co., Ltd.
McLagan Furniture Co., Ltd.
Globe Furniture Co., Ltd.
Anthes Baetz Furniture Co., Ltd.
Gerhard Heintzman
Gourlay-Winter-Leeming
Pollock Mfg. Co.
Preston Furniture Co., Ltd.
Columbia Graphaphone

They will tell you what they think of the Perrin Hydraulic Press

WILLIAM R. PERRIN LIMITED
530 KING ST. EAST, TORONTO

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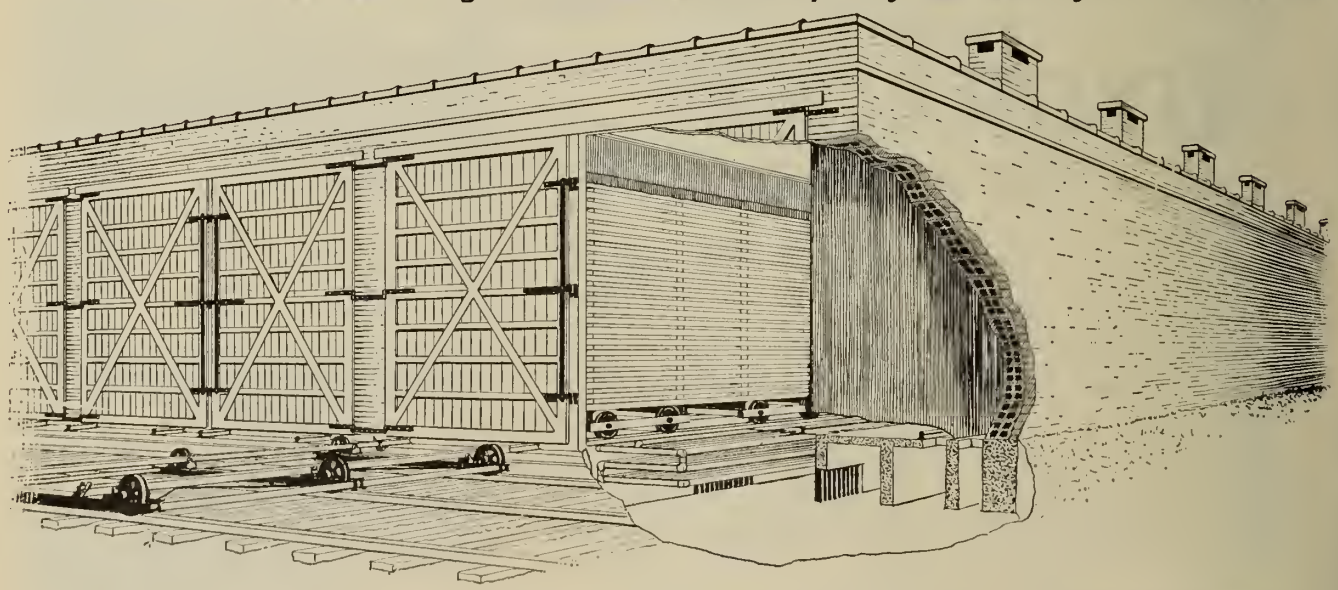
No Staining, checking, warping or honeycombing in Cutler HALF TIME Kilns

Use them and get more orders on both quality and delivery



Short curtains at centre keep air from going over piles.

Long curtains at side remove moisture from air.

Some air is used over again so little heat is lost.

Cutler Dry Kilns

Better Drying in Half the Time

Hollow tile building keeps heat in

Fans force air through heater coils in central tunnel and HORIZONTALLY through lumber piles. Steam is added as needed. Write for "Better Drying in Half the Time," containing letters from many prominent lumber companies.

CUTLER DESK COMPANY **Dept. B** **BUFFALO, N.Y.**

Moistat Reduces 6/4" Sap Gum Green From Saw to 5 Per Cent in 9 Days

The above record was made at the plant of the Holly Ridge Lumber Company, Monroe, Louisiana, which recently installed two NATIONAL MOISTAT KILNS after an investigation of the splendid results the Sherrill Hardwood Lumber Company of Merryville, Louisiana, was obtaining with the MOISTAT SYSTEM.

Another test made at the Holly Ridge plant was on 4/4" sap gum, green from the saw with a moisture content of 160 per cent. This was brought down to 4 per cent moisture content in six days. Mr. W. I. Wymond, President of the Holly Ridge Lumber Company writes us: "Our mill forwarded us this report (the one mentioned above) and we are frank to say that we are very much pleased with the performance."

The Willys-Overland Company of Toledo, Ohio, uses large quantities of sycamore, birch, maple, ash, oak and elm. Before putting in the MOISTAT SYSTEM, 288 hours were required to dry certain kinds of stock. This stock is now being dried in 96 hours. Operations that previously required 192, 216, 264 and 576 hours are now being done in 118, 136, 120 and 356 hours, respectively—an average saving of more than half the time.

The MOISTAT SYSTEM not only dries lumber faster, but it produces a **cleaner, straighter** and **better** grade of lumber than any other method.

Progressive millmen all over the United States and Canada are writing for information on this justly famous system of speeding up lumber drying. If you desire, we can send you a list of installations, so you can write directly to the mill-owner for your information.

THE NATIONAL DRY KILN COMPANY

1117 East Maryland Street, Indianapolis, Indiana

Branches: Albany, N.Y.—Memphis, Tenn.

NATIONAL DRY KILNS

The
PEDWELL
HARDWOOD
LUMBER
CO.

Office
and Yard:
Ft. of Spadina
Avenue
TORONTO

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

TENNESSEE SCENTED CEDAR

1 in.—43,000
1¼ in.— 1,500

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com
1 in.	59,000	10,500	163,000	214,000
1¼ in.	31,000	.....	26,000	17,000
1½ in.	15,200	100	7,000	104,000
2 in.	8,000	.....	25,000	63,000
2½ in.	4,500	.....	4,300	3,000
3 in.	21,700	.....	4,500	4,000
4 in.	9,300	.....	900	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,600	.....	3,000	.....
1 in.	90,000	.....	140,000	81,000
1¼ in.	15,000	1,800	46,000	49,000
1½ in.	26,700	2,600	98,000	37,000
2 in.	16,000	.....	15,000	45,000
2½ in.	2,000	.....	.....	.....
3 in.	1,300	.....	.....	.....
4 in.	1,500	.....	300	.....

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	17,000	7,000	15,900	3,000
¾ in.	55,000	173,000	6,000	26,000
1 in.	111,000	16,000	21,200	65,000
1¼ in.	50,000	9,600	200	.....
1½ in.	33,000	35,000	.....	1,500
2 in.	28,000	55,000	3,000	9,000
2¼ in.	3,200	3,200	.....	.....
2½ in.	110,000	39,000	2,000	1,800
3 in.	35,000	22,000	300	.....
3½ in.	4,500	3,000	.....	.....
4 in.	41,000	17,800	.....	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	.....	.....	.....
¾ in.	3,900	.....	6,300	3,000
⅝ in.	.....	.....	400	800
1 in.	56,000	400	65,000	3,700
1¼ in.	16,000	27,300	79,000	5,800
1½ in.	1,000	500	28,500	200
2 in.	700	.....	28,000	5,700
2½ in.	.....	.....	.....	.....
3 in.	.....	.....	1,200	.....
4 in.	600	.....	200	.....

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	51,000	191,000	.....	.....
⅝ in.	.....	53,000	21,000	2,400
1 in.	107,000	28,000	5,500	50,000
1¼ in.	62,000	107,000	9,000	2,100
1½ in.	62,000	75,200	5,000	500
2 in.	68,000	120,000	26,000	10,000
2¼ in.	1,500	1,400	.....	.....
2½ in.	94,100	34,000	.....	.....
3 in.	27,800	22,000	7,000	12,000
4 in.	8,600	5,600	.....	.....

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	.....	.....	4,700	500
1 in.	13,200	6,400	9,000	1,400
1¼ in.	5,900	.....	4,900	.....
1½ in.	400	.....	4,000	.....
2 in.	.....	.....	7,400	.....

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	.....	4,500	600	2,500
1¼ in.	14,400	15,500	2,000	9,000
1½ in.	.....	1,800	11,200	3,000
2 in.	8,100	7,400	300	4,700
3 in.	.....	.....	.....	300

QUARTERED SAP GUM

	1 & 2	No. 1C	No. 2C
4/4	.....	1,800	.....
5/4	.....	9,000	.....
8/4	.....	18,000	13,800	300
10/4	.....	15,000	14,300	.....
12/4	.....	300	.....	300

POPLAR

	1 & 2 18" up	1 & 2	No. 1 Com.	Bright Saps
¾ in.	.....	.....	700	200
⅝ in.	.....	18,000	24,100	11,900
1 in.	.....	63,000	93,000	23,700
1¼ in.	2,300	7,000	27,000	10,000
1½ in.	5,300	6,000	17,000	32,000
2 in.	.....	13,300	29,000	40,800
2½ in.	.....	4,000	.....	14,800
3 in.	.....	3,600	8,000	21,000
4 in.	.....	6,000	4,500	9,200

Also Large Stocks of Ash, Basswood, Beech, Birch, Hard and Soft Maple.

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

THIS MONTH

Buy Your Stock of

Basswood Panels

FROM

The Pembroke Plywood Company

PEMBROKE :: ONTARIO

BASSWOOD CROSSBANDING
BASSWOOD DRAWER BOTTOM STOCK
PANELS IN NATIVE WOODS

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co.
LIMITED
Orillia, Ontario
Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

BIRCH

MAPLE, SPRUCE HEMLOCK, FIR

CRATING

Southern and Canadian Hardwoods

Will saw to order 600,000 feet Choice Birch Logs

Percy E. Heeney
Kitchener, Ont.

PERKINS
183
TRADE MARK
REG. U. S. PAT. OFF.

The Standard of Comparison

The distinctive quality of the vegetable glue that bears the name of Perkins is so well known to the builder of plywoods that its purchase insures the utmost satisfaction.

Fortified by being the original patented vegetable glue and backed be years of quality reputation, "Perkins 183" has come to be regarded as the standard of comparison when glues for plywood construction are being considered.

The Map Shows Ten Distributing and Warehousing Points.

All Orders Should be Sent to the South Bend Office.

Patents covering Perkins Glue have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy, and other foreign countries.

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Factory and General Offices:
Lansdale, Pennsylvania

Sales Office:
South Bend, Indiana

"Fibro" Wood Carvings

Made in Canada

JOHN WALTER & SONS LIMITED

KITCHENER :-: ONTARIO

KANE VEGETABLE GLUE

The Superior Glue

Kane Manufacturing Co.
1832-42 S. Clark St.
Chicago — Illinois

PATENTED

A Better Clamp At a Reasonable Price

Superior Maple Bar Clamps have head and tail blocks of malleable iron that swivel so as to hold firmly at any angle.

Approved and adopted by Grand Rapids Factories and Training Schools. These better clamps may be had at a very reasonable price.

Profitable Territory Open
Salesmen May Carry as Side Line
Write for Prices and Catalog Showing Line of Clamps and Hand Screws

Superior Hand Screw & Clamp Co.
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The Peter Hay Knife Co., Ltd.

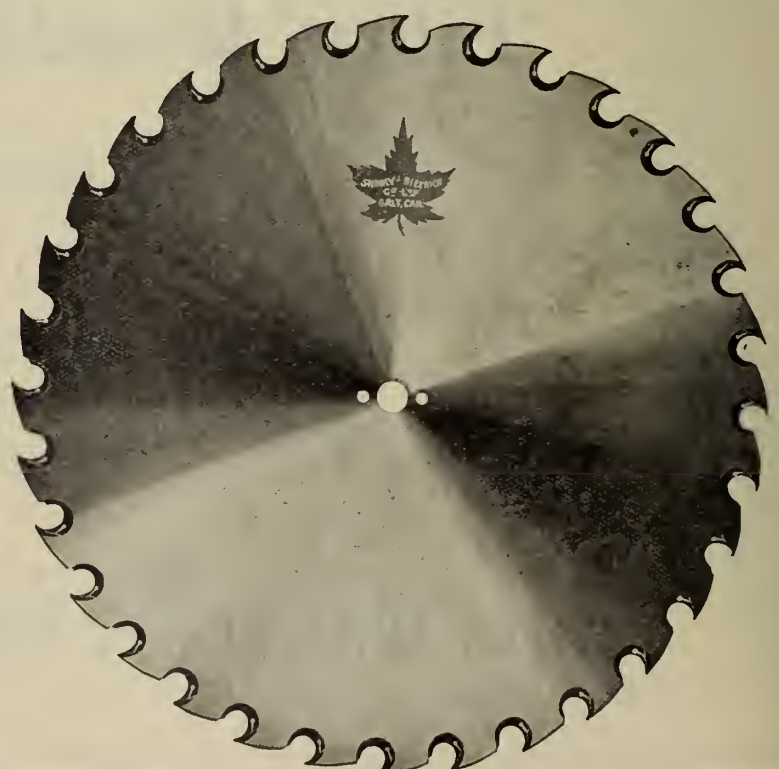
Manufacture the Best
PLANER KNIVES and CUTTERS
OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited
GALT, ONTARIO

MAPLE LEAF SAWS

There is a Maple Leaf Saw for every type of work – one that will reduce your cutting costs.

Maple Leaf Saws are made of extra refined Razor Steel tempered by our secret process.

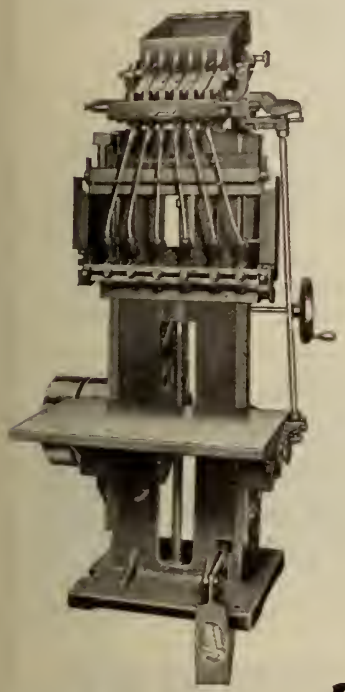


Shurly - Dietrich
Limited
Galt - Canada

Store and repair branches at Vancouver

"The largest all-Canadian saw manufacturers."

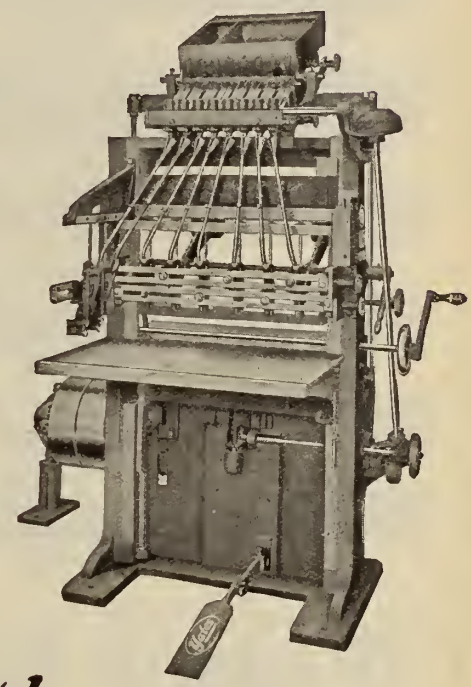
INCREASE YOUR BOX OUTPUT WITH THE LATEST IMPROVED NAILERS



CLOSED BACK TYPE

A Company installed a couple of our Nailing machines and wrote us later on saying. "There is no question, these machines have certainly increased our output and lowered our manufacturing costs."

Yates Nailing machines have been a success at every installation, as they have proven the saving which can be effected by their use. It may be worth your while to inquire about nailing machines for your business.

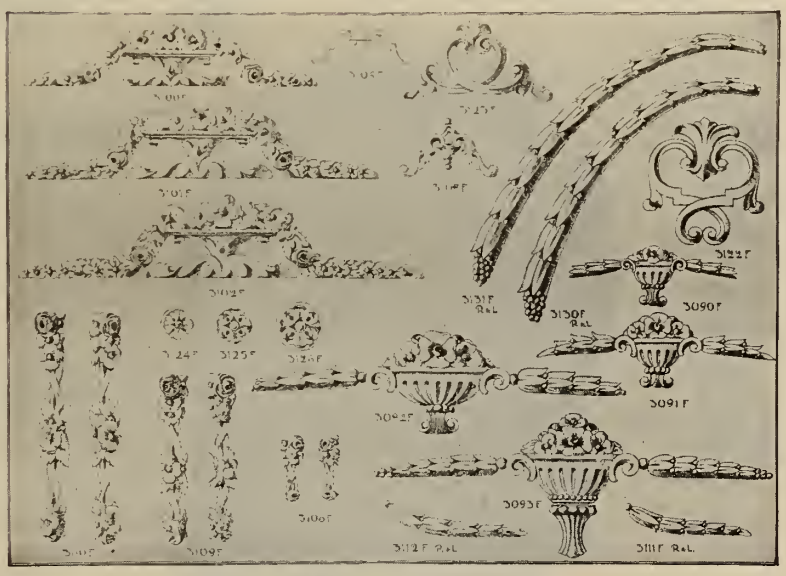


OPEN BACK TYPE

P. B. Yates Machine Co. Ltd.
HAMILTON - ONTARIO

PERIOD CARVINGS *for* FURNITURE

Largest Manufacturers of Imitation Wood Carvings in the World Quality the Best. Prompt Shipments



Unlimited Facilities for Manufacturing High Grade Wood Carvings in Composition and Wood Fibre

Reproductions of Exclusive Designs Our Specialty

THE DECORATORS SUPPLY CO.

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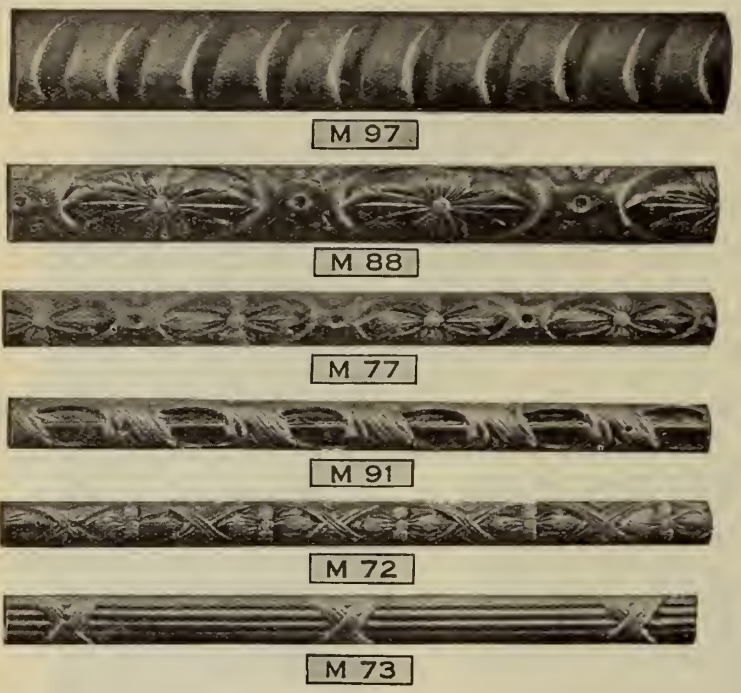
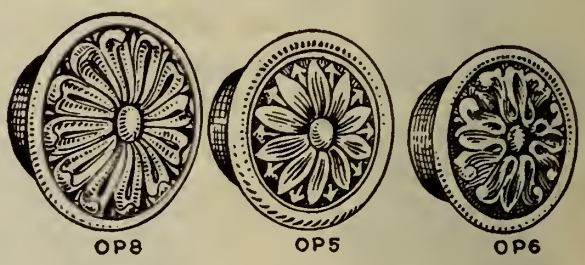
New Catalog Sent on Request



MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.



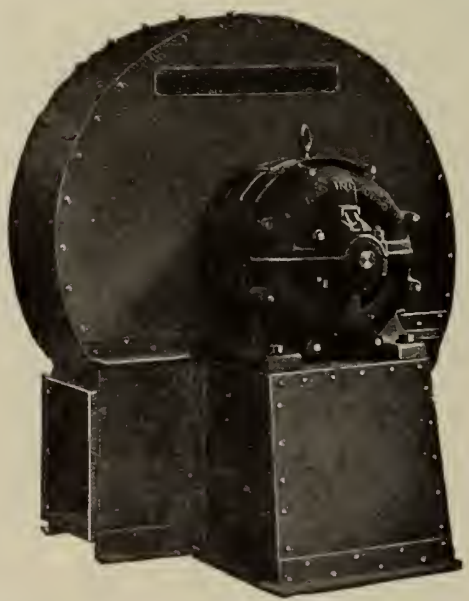
Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

Insist on CANADIAN Slow Speed Mill Exhausters for Blow Pipe Systems

Save 20 to 50% of your Power

with Canadian Mill Exhausters and the scientific proportioning of piping by your blow pipe company in accordance with our suggestions.



Get Greatly Increased Durability

from operation at one-third lower speed in oversize bearings throughout. To whom shall we send Cat. 490-13 with full details.

CANADIAN BLOWER & FORGE COMPANY, LTD., Kitchener, Ont.

Toronto, Montreal, Vancouver, Calgary, St. John, Winnipeg

OAKEY'S

Glass Paper, Flint Sand Paper, Garnet Paper

IN SHEETS AND ROLLS FOR ALL PURPOSES

Rolls 50 yards long, 18 in., 20 in., 24 in., 30 in., 36 in., 40 in., 42 in. and 48 in., wide

SHEETS, DISCS, STRIPS AND BANDS can be made to Special Sizes to suit the requirements of Purchasers

JOHN OAKEY & SONS LTD., WELLINGTON EMERY AND BLACK LEAD MILLS LONDON, S. E. 1.

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CARVED MOULDINGS, CARVINGS, CARVED LEGS

No. D-775 (Reduced One-Half)

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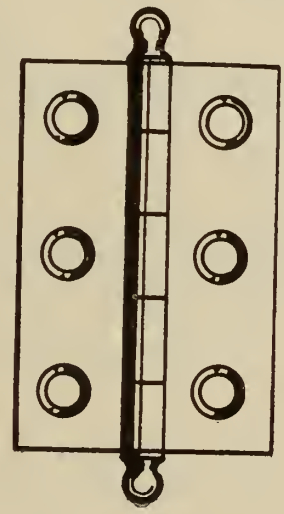
"KLISE' mouldings are carved, not pressed. Made in several hundred classic, period designs, in various sizes and shapes.
Catalogue of legs and samples of mouldings sent on request. Send us your designs or samples of carvings for quotation.

KLISE MANUFACTURING COMPANY
Grand Rapids, Michigan

BUTTS



Both plain and ball tip in five sizes

1" 1¼" 1½" 1¾" 2"

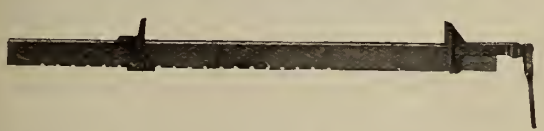
In any desired finish

Larsen & Shaw Ltd.

Walkerton, Ont.

Manufacturers of
FURNITURE HARDWARE AND SPECIAL STAMPINGS

BLACK BROS.
CLAMPS



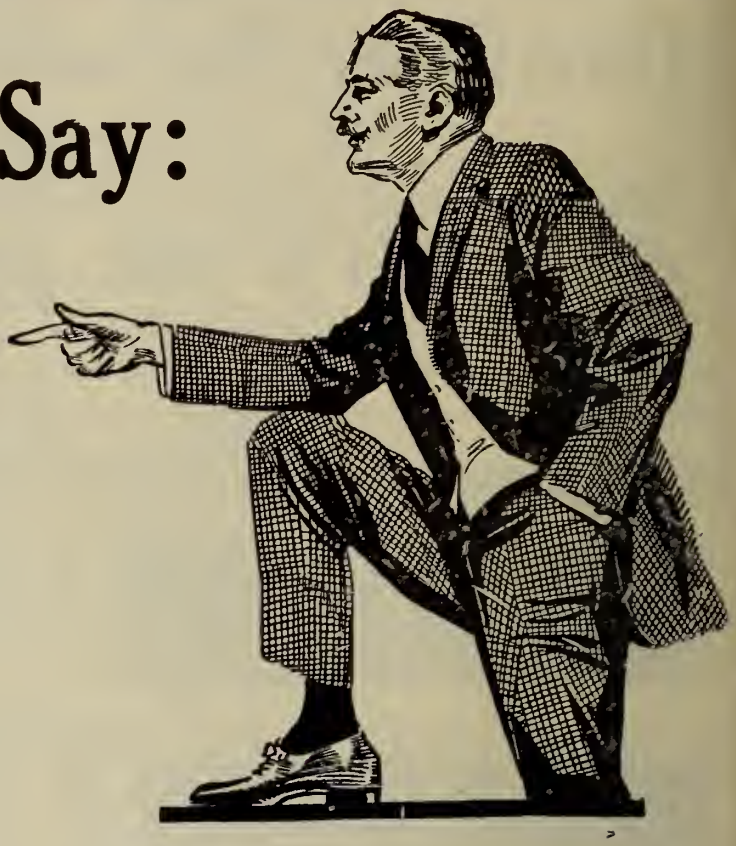
Where Black Bros. Clamps are known, there is no second choice. Know them.

Sold by Aikenhead Hardware Ltd., Toronto Vokes Hardware Co., Ltd Toronto J. L. Neilson & Co., Winnipeg and other leading dealers throughout Canada.

The Black Bros. Co. - Mendota, Ill., U.S.A

Subscribe for the
Canadian Woodworker
and
Furniture Manufacturer
Only $2.00 per year

Sales Experts Say:



"Certain of our clients spend all their appropriation in Business and Trade papers.

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"Some advertisers might spend nine-tenths of their appropriation in business papers....."

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"We buy space:—first in the most logical technical and class industrial publications."

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"Where funds appropriated are small, it is not unusual for us to recommend that the entire amount be spent in business and trade papers."

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"Our agency believes in trade papers and makes use of them to quite a large extent."

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Intelligent Canadian Agency

Hugh C. MacLean Publications

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Private Automatic Exchange

ACTION

The Automatic Telephone

Anything is delay which retards action. Your plant intercommunication may be handled as efficiently as the means permit, and yet delay exists. For there is only one ***rapid*** means of intercommunication between the widely separated units of a great plant. It is P.A.X.

"A Pair of Wires and a Dial," telling of P.A.X. in operation is yours for the asking. Write our nearest House.

Northern Electric Company
LIMITED

MONTREAL	TORONTO	WINDSOR	CALGARY
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"Makers of the Nation's Telephones"

MANUFACTURING
Manual Telephones
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DISTRIBUTING
Construction Material
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We Want to Sell

1 car 4/4 1 & 2's Chestnut.

2 " 4/4 1 & 2's Plain Red Oak.

1 " 5/4 10" and wider White Oak. Step Plank.

3 " each 4/4 & 8/4 No. 1 Common & Selects Quartered White Oak 18 Months Dry.

2 " 4/4 1 & 2's Yellow Poplar Straight or Mixed Cars Band-Sawn, Soft Textured.

We operate our own Band Mill, Dry Kilns, Planers and Resaws.

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Manufacturers and Wholesalers of

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Office and Yard: 148 Carroll St. St. Louis, Mo

Hardwood and Yellow Pine for Immediate Shipment from Stock

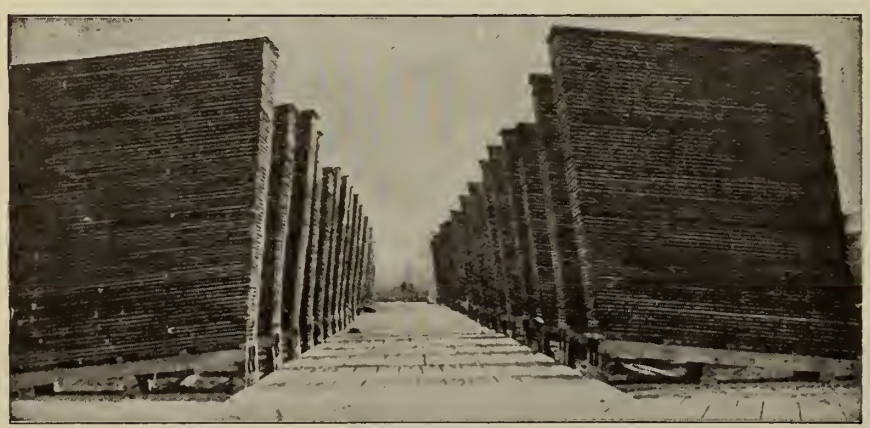
Complete Stock of Ply Wood Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Efficiency Marks Every Step of Our Service to You



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Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

TABLE SLIDES TABLE RIMS TABLE PINS

Makers of—

The "Bruce Slide"

BRUCE WOODWORKERS, Limited, Chesley, Ont.

Two Panel Fir DOORS

At the price we ask are certainly the best value in Doors to-day "BUY NOW."

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E. B. Norman & Company, Incorporated

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GUM OAK ASH

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HARDWOOD MANUFACTURERS INSTITUTE SCIENTIFIC UTILIZATION TRADE MARK

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Standardized Grades

General Office: LOUISVILLE, KY.

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We will not tire you with a long article on the merits of our Veneers.

All Ads read just about alike—stressing **course of supply, quality of product, complete stocks, prompt shipments, c o u r t e s y of service, etc.**

We, too, could say all that and then some, but we won't.

Talk's cheap. We've got the goods.

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Let Us Show You

GEO. W. HARTZELL, PIQUA, O.

WALNUT SPECIALISTS

Adaptable to good design and finish, Ritter Appalachian Oak is unexcelled for the manufacture of furniture.

Economy in Uniform Quality

Of the fifty different species of oak found in the United States, at least twenty are sold indiscriminately under the general classifications of "Red" and "White."

Kiln drying tests have proved that it is wasteful and therefore very unsatisfactory to mix a number of oak species in the same kiln. Such practice usually results in serious injury or loss of stock.

Consequently, the consumer should secure oak from localities producing the least number of species in order that his lumber will have like seasoning and working qualities.

The timber properties of the W. M. Ritter Lumber Company lie in that part of the Appalachian region famed for the excellent quality of its hardwoods. Here the white oak, comprising approximately 90% of our total oak production, consists of but two species, and their textures, grain, seasoning, and working qualities are so nearly alike as to make them most economical for manufacturing purposes.

For Full Particulars Consult Our Representative or Write Us.

W. M. RITTER LUMBER COMPANY

Largest Producer of Hardwoods — **Annual Capacity—130,000,000 Feet**

General Offices **COLUMBUS, OHIO**

RITTER

APPALACHIAN OAK

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE, LA.

Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

BEDNA YOUNG'S
SOUTHERN
HARDWOODS

The quality and saleability of your furniture depends primarily upon your selection of hardwoods, for without good material the finest craftsmen are helpless. Play safe—always choose Bedna Young's hardwoods. Fine, figured, quartered oak a specialty.

BEDNA YOUNG LUMBER CO.

Jackson, Tennessee

From Old Kentucky

The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

Ash, Oak, Gum, Poplar, Hickory, Walnut, Chestnut, Beech, Maple, Elm, Sycamore, Cottonwood. Quotations promptly.

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Owensboro - Kentucky
Bandmills Owensboro; Campbellsville, Kentucky

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HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
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Canadian Sales in Charge of
C. W. PETERS
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STRONG GLUE
means
STRONG JOINTS

The most critical Woodworkers have used DUNN'S GLUES for nearly Half a Century.

Uniform Shipments Guaranteed

Let us solve your glue problems. Our Service Department is at your disposal and places you under no obligation whatsoever.

Free working samples upon request.

THOMAS W. DUNN CO.
of Canada Limited
P.O. Box 672 MONTREAL, P.Q.

THURN-MAXSON
HARDWOODS

"The delight of the craftsman"

The success of our hardwoods in Canada, particularly among the most noted cabinet-makers, is convincing proof of their uniform high quality.

We should like to be serving you, too.

OAK, CYPRESS, GUM and other woods —in most any grade or quantity; immediate shipment.

Thurn-Maxson Lumber Co
SOUTH BEND, INDIANA
Owners of Chas. O. Maus Lumber Company

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

Mills Coal Grove Ohio
General Offices: 33 Rector St. New York City

A Permanent Lumber Service

AFTER several years of inactivity we are now cutting on our modern fully equipped mills at Manistique and Little Lake, Upper Michigan. The timber behind these mills was purchased many years ago by the Stack interests from the then "unlimited" supply. Its quality, particularly the maple and birch, is the envy of northern mill men among whom this tract is famous.

This timber wiil run the mills to full capacity for fifteen to twenty years. The 40,000,000 feet annual cut will run:

15,000,000 ft. maple annually
6.000,000 ft. birch annually
2,500,000 ft. beech annually
2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually
the balace in Spruce and Tamarack.

Our exceptional service, grades, and manufacture will be maintained. "Low freight rate shipments by water to Toronto, Montreal, Owen Sound, Port Arthur, and other Great Lakes and St. Lawrence River Ports. Conveniently located also for rail shipments to inland points by the C.P.R. or Soo line."

We will be pleased to hear from old friends and from new ones who can understand and appreciate what permanent connection with such a source of supply would mean.

STACK LUMBER CO.

ESCANABA MICHIGAN

Southern Hardwoods

MISSISSIPPI DELTA GUM

The Best That Grows

OUR mills are producing some beautiful stock at the present time, and we can assure prompt delivery in any quantity.

Plain and Quartered Red and Sap Gum, Plain and Quartered White Oak, Plain Red Oak, Cottonwood, Cypress, Ash, Elm.

Write for prices and full particulars

MISSISSIPPI VALLEY HARDWOOD CO., INC.

Bandmills: Memphis, Tenn., Clarksdale, Miss.
Sales Office: Memphis, Tenn.
MISSISSIPPI DELTA GUM The Best That Grows

Up from the South to You!

OAK ASH GUM ELM MAGNOLIA SYCAMORE COTTONWOOD

We offer Canadian buyers a choice of the finest hardwoods manufactured in the South. Place a trial order with us and you'll come back for more. Quality and prices are RIGHT. Let's get acquainted. A card or wire will bring our prices.

SOUTH TEXAS LUMBER COMPANY

MANUFACTURERS SOUTHERN HARDWOODS

General Sales Office: Houston, Texas Band Mills: Onalaska, and Dayton, Texas

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(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

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We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

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Band Mills: Memphis, Tenn., Helena, Ark.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK
- 3 cars 4/4" Fas.
- 5 " 4/4" No. 1 Common.
- 1 " 4/4" No. 2 Common.

PLAIN WHITE OAK
- 2 cars 4/4" Fas.
- 2 " 5/4" No. 1 Com. & Btr.
- 3 " 4/4" No. 1 Com. & Sel.
- 3 " 4/4" No. 2 Common.

QUARTERED RED OAK
- 3 cars 4/4" Fas.
- 6 " 4/4" No. 1 Common.
- 2 " 4/4" No. 2 Common.

PLAIN RED OAK
- 2 cars 4/4" Fas.
- 3 " 5/4" Fas.
- 3 " 6/4" Fas.
- 2 " 8/4" Fas.
- 8 " 4/4" No. 1 Common.
- 2 " 5/4" No. 1 Common.
- 2 " 6/4" No. 1 Common.

QUARTERED RED GUM
- 2 cars 4/4" Fas.
- 2 " 4/4" Fas. Fig.
- 2 " 5/4" Fas.
- 2 " 6/4" Fas.
- 10 " 4/4" No. 1 Common.
- 2 " 5/4" No. 1 Common.
- 2 " 6/4" No. 1 Common.

QUARTERED RED GUM S.N.D.
- 5 cars 5/4" No. 1 Com. & Btr.
- 5 " 6/4" No. 1 Com. & Btr.
- 10 " 8/4" No. 1 Com. & Btr.

ASH
- 4 cars 10/4" No 1 Com. & Btr.
- 2 " 12/4" No. 1 Com. & Btr.
- 1 " 6/4" No. 1 Com. & Btr.
- 2 " 4/4" No. 1 Common.
- 2 " 4/4" No. 2 Common.
- 2 " 5/4" No. 1 Com. & Btr.

SAP GUM
- 8 cars 4/4" Fas.
- 3 " 5/4" Fas.
- 3 " 6/4" Fas.
- 15 " 4/4" No. 1 Common.
- 8 " 4/4" No. 2 Common.
- 5 " 5/4" No. 1 Common.
- 5 " 6/4" No. 1 Common.

COTTONWOOD
- 2 cars 4/4" Fas.
- 6 " 4/4" No. 1 Common.
- 3 " 4/4" No. 2 Common.

ELM
- 2 cars 4/4" Log Run.
- 2 " 5/4" Log Run.
- 1 " 8/4" Log Run.
- 6 " 10/4" Log Run.
- 6 " 12/4" Log Run.

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THIRTY YEARS AGO, the Chapman & Dewey Lumber Company purchased one hundred thousand acres of hardwood timber-lands in Mississippi, Craighead and Poinsett Counties, Arkansas. The selection of this timber tract was made after a careful study of hardwood stumpage in the South; and the purchase was made there, primarily, because of the exceptional *quality* of the hardwoods growing in this St. Francis Basin. Since that day, thirty years ago, St. Francis Basin Hardwoods have gained a national reputation. Discriminating buyers now realize that lumber manufactured from this stumpage cannot be excelled for the most exacting requirements of Fine Woodworking.

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Manufacturers
HARDWOOD LUMBER and BOX-SHOOKS
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MEMPHIS, TENNESSEE

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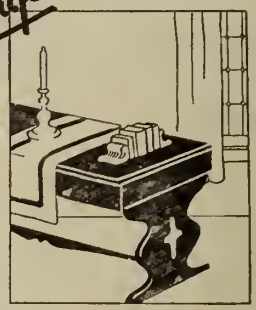

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Plain and Quartered, Uniform Color—Soft Texture

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Oak Timbers and Planking

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Office: CINCINNATI, OHIO

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Hardwoods of All Kinds
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BUFFALO *"Buy and Sell Hardwood in this Market."*
FAMOUS LUMBER CENTER
Unequalled facilities for rapid dispatch, by Rail, Lake or Barge Canal, on all your requirements, large or small.
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Taylor & Crate Hardwoods of All Kinds
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Established 56 Years
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Hardwoods
Prompt Shipments—from Buffalo Yards or from Mill direct to you
8,000,000 feet Dry Stock on Hand. 1333 Clinton Street

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We specialize in—WHITE ASH, OAK AND MAPLE

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Our Specialties—Quartered White Oak, Plain and Quartered Gum
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HARDWOODS
Our Specialty—West Virginia and Pennsylvania Cherry
West Virginia Soft Red and White Oak. 1055 Seneca Street

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A complete stock of seasoned Hardwoods
Including Ash, Basswood, Birch, Cherry, Chestnut, Cypress, Elm, Gum, Hickory, Maple, Plain and Quartered Oak, Poplar and Walnut.
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NORTHERN
Gray Elm and Brown Ash
Niagara Street Corner Arthur

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Specialties
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1" to 4 No. 1" Common and 1s & 2s **HARD MAPLE**
Excellent widths and lengths.
Can kiln dry and surface.
G. Elias & Bro., Inc. Elk Street to the Buffalo River **Buffalo, N. Y.**

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Our Specialities
Oak Poplar Ash Maple
932 Elk Street

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Are you interested in
WESTERN PINE
DRY STOCK

1 x 4" & up—	"C" Select and Better	100,000'
1½ x 6" & up—	do	50,000'
2 x 6" & up—	do	.70,000'
	This is good wide Stock	
1½ x 6 & up—	No 1, 2 and 3 SHOP	135,000'

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LIMITED
SUCCESSORS TO
Terry & Gordon, LIMITED

Montreal TORONTO Vancouver

Ontario Representatives for
The British Columbia Mills, Timber and Trading Co. Ltd., Vancouver, B.C.

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The LAST WORD in K QUALITY & SERVICE
BRAND

HARDWOODS
Oak, Ash, Gum, Poplar, Maple, Elm, Cottonwood, Sycamore.

CYPRESS
Lath, Lumber, Dimension.

VENEERS
Door Panel, Piano Rim, Cypress Battery Stock.

OAK FLOORING
"Chickasaw Brand"

Two Complications Looming up Ahead

Southern hardwood output is undergoing heavy curtailment owing to scant log supplies incident to unprecedented rains in producing territory and transportation difficulties threaten to recur when the crop movement is added to present record traffic volume. But stock shortage and delays in transit may be avoided by promptly ordering your requirements in

HARDWOODS - VENEERS
CYPRESS - OAK FLOORING

Our service is designed to give you just what you specify in width, thickness, length, grade and quality, in either straight or mixed cars. Constantly improved for 21 years, it is so fully meeting the approval of exacting buyers that we are finding it necessary to continuously expand our manufacturing facilities. Send us your next order.

James E. Stark & Company, Inc.
Memphis Veneer & Lumber Co.
MANUFACTURERS

General Offices
MEMPHIS, TENNESSEE

Chicago Offices
25 N. DEARBORN ST.

"Better Use Birch"

The Reliability of Birch

In selecting a cabinet-wood for furniture or interior trim, the woodworker looks for those qualities which will accentuate and preserve the character of his work. For this reason, he very often chooses Birch.

As a wood, Birch is extremely hard, and does not warp, split or twist. The texture is firm, and the grain does not rise—neither are there those minute open pores that after a time absorb the finish and make a shabby - looking "job."

Birch is eminently reliable, a "safe" wood to work, economical and handsome.

For office furniture, Birch has no equal. It combines great strength with the hardness to withstand the roughest usage.

Birch for Office Furniture

Anderson, Shreiner & Mawson

Colonial Bldg., 13 King St. West, Toronto

HARDWOOD LUMBER

Mills at South River Ontario

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

56 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar both plain and quarter sawed, Sound Wormy Chestnut, Cypress and Ash.

"Wire collect for prices or other information. Time is Money, delays pay no dividend."

La Tuque Turpentine

Made by an improved laboratory process from Canadian woods.

An excellent thinner for paste, colors, enamels, stains, paints and varnishes.

La Tuque Turpentine contains no free rosin.

The quality is there
The price is right

Write us for particulars

BROWN CORPORATION
56 St. Peter St., QUEBEC, P.Q.

WE CAN MAKE PROMPT DELIVERIES on Mahogany, Walnut, Quartered Oak and Gum Panels

We can serve you well on any of your requirements calling for the above woods. The quality of these panels will appeal to you, as well as the service we are able to give.

Send in your list for prices.

AMERICAN PLYWOOD CORPORATION
New London, Wisconsin, U.S.A.

OTIS
TRADE MARK

Tabasco
Honduras

ESTABLISHED 1867
INCORPORATED 1886

Laguna
Mexican

MAHOGANY

Rarely are such stores of precious wood to be found as may be seen in our yards. Across the seas from tropic lands it comes. From thick jungles where the light of day but dimly penetrates and where tangled native paths make difficult the bringing out of timber. Here the black man labors, risking life from jungle dangers, that supplies will not diminish and your orders may be filled.

Twelve million feet per year is the capacity of OTIS mills. An adequate supply is always on hand for prompt shipment. Get our prices.

Otis Manufacturing Company

Peters Avenue and The River

NEW ORLEANS, LA.

Chicago Office: Room 208, 128 N. Wells Street

Southern Hardwoods
and
Genuine Louisiana Red Cypress

QUARTERED RED GUM

4/4" 1sts & 2nds	8,000'
5/4" 1sts & 2nds	1,000'
6/4" 1sts & 2nds	1 car
8/4" 1sts & 2nds	2 cars
3/4" No. 1 Com. & Sel.	9,000'
4/4" No. 1 Com. & Sel.	2 cars
5/4" No. 1 Com. & Sel.	2 cars
6/4" No. 1 Com. & Sel.	1,000'
8/4" No. 1 Com. & Sel.	9,000'

PLAIN RED GUM

1/2"x6" & up, 1sts & 2nds	2 cars
5/8"x6" & up, 1sts & 2nds	1 car
5/8"x13" & up, 1sts & 2nds	2 cars
3/4"x6" & up, 1sts & 2nds	1 car
3/4"x13" & up, 1sts & 2nds	1 car
4/4"x6" & up, 1sts & 2nds	5 cars
4/4"x13" & up, 1sts & 2nds	1car
5/4"x6" & up, 1sts & 2nds	1 car
5/4"x13" & up, 1sts & 2nds	1 car
6/4"x6" & up, 1sts & 2nds	2 cars
5/8" No. 1 Com. & Sel.	2 cars
3/4" No. 1 Com. & Sel.	1 car
4/4" No. 1 Com. & Sel.	10 cars
5/4" No. 1 Com. & Sel.	2 cars
6/4" No. 1 Com. & Sel.	1 car
4/4" No. 2 Common	2 cars

QUARTERED RED GUM—SND

5/8" 1sts & 2nds	5,000'
8/4" 1sts & 2nds	1 car
10/4" 1sts & 2nds	1 car
4/4" No. 1 Com. & Sel.	2 cars
5/4" No. 1 Com. & Sel.	1 car
8/4" No. 1 Com. & Sel.	1 car
10/4" No. 1 Com. & Sel.	1 car

GENUINE LOUISIANA RED CYPRESS

4/4"x6" & up, 1sts & 2nds	2 cars
4/4"x13" & up, 1sts & 2nds	2 cars
4/4"x18" & up, 1sts & 2nds	7,000'
4/4"x25" & up, 1sts & 2nds	3,000'
5/4"x6" & up, 1sts & 2nds	2 cars
5/4"x13" & up, 1sts & 2nds	1 car
6/4"x6" & up, 1sts & 2nds	1 car
6/4"x13" & up, 1sts & 2nds	2 cars
6/4"x18" & up, 1sts & 2nds	1 car
8/4"x6" & up, 1sts & 2nds	3 cars
10/4"x6" & up, 1sts & 2nds	1/2 car
4/4" Selects	3 cars
5/4" Selects	1 car
6/4" Selects	3 cars
8/4" Selects	1 car
4/4" No. 1 Shop	5 cars
5/4" No. 1 Shop	1 car
6/4" No. 1 Shop	2 cars
8/4" No. 1 Shop	1/2 car
4/4"xRW, No. 1 Com	1 car
1x4" No. 1 Com	7,000'
1x6" No. 1 Com.	2,000'
1x10" No. 1 Com.	3,000'
5/4"xRW, No. 1 Com.	8,000'
6/4"xRW, No. 1 Com.	8,000'
4/4"xRW, No. 2 Com.	2 cars
1x10" No. 2 Com.	2,000'
1x12" No. 2 Com.	3 cars
5/4"xRW, No. 2 Com.	1/2 car
4/4"xRW, Boxing	2 cars
8/4"xRW, No. 2 Com.	1/2 car
4/4"xRW, Boxing	2 cars
1x8" Boxing	1 car
1x10" Boxing	1 car
1x12" Boxing	1 car
4/4"xRW, Pecky	3 cars
1x10" Pecky	1 car
1x12" Pecky	2 cars

PLAIN SAP GUM

5/8"x13" & up, 1sts & 2nds	1/2 car
5/8"x6" & up, 1sts & 2nds	2 cars
3/4"x6" & up, 1sts & 2nds	3,500'
4/4"x6" & up, 1sts & 2nds	5 cars
4/4"x13" & up, 1sts & 2nds	2 cars
4/4"x18" & up, 1sts & 2nds	1 car
5/4"x6" & up, 1sts & 2nds	2 cars
5/4"x13" & up, 1sts & 2nds	2 cars
5/4"x15" & up, 1sts & 2nds	1 car
6/4"x6" & up, 1sts & 2nds	3,000'
6/4"x13" & up, 1sts & 2nds	8,000'
6/4"x18" & up, 1sts & 2nds	8,000'
4/4"x9" to 12" Box Boards	1 car
4/4"x13" to 17" Box Boards	1 car
4/4" No. 1 Com. & Sel.	10 cars
5/4" No. 1 Com. & Sel.	2 cars
6/4" No. 1 Com. & Sel.	1/2 car
3/4" No. 2 Common	1/2 car
4/4" No. 2 Common	5 cars
5/4" No. 2 Common	1 car

PLAIN RED OAK

3/4"x6" & up, 1sts & 2nds	5,000'
3/4"x13" & up, 1sts & 2nds	5,000'
4/4"x6" & up, 1sts & 2nds	5 cars
4/4"x13" & up, 1sts & 2nds	2 cars
3/4" No. 1 Com. & Sel.	6,000'
4/4" No. 1 Com. & Sel.	10 cars
6/4" No. 1 Com. & Sel.	3,000'
4/4" No. 2 Common	10 cars

PLAIN WHITE OAK

5/8" 1sts & 2nds	1 car
4/4" 1sts & 2nds	1 car
5/8" No. 1 Com. & Sel.	1 car
3/4" No. 1 Com. & Sel.	1/2 car
4/4" No. 1 Com. & Sel.	5 cars
4/4" No. 2 Common	5 cars

QUARTERED WHITE OAK

5/4" No. 1 Com. & Sel.	2 cars
8/4" 1sts & 2nds	3,500'
8/4" No. 1 Com. & Sel.	1 car

Plain Red Gum
Quartered Red Gum

Plain Sap Gum
Quartered Sap Gum

Plain Red Oak
Quartered Red Oak

Plain White Oak
Quartered White Oak

E. SONDHEIMER CO.

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The Six Best Sellers

Walnut
Oak
Poplar
Chestnut
Gum
Ash

All by BANNING

Canadian Representative: A. E. Klippert, 11 Laxton Avenue, Toronto, Ontario

We are Now in a Position to Make 48 Hour Shipment

MAPLE

4/4	No. 1	Common	& Better	150,000′
8/4	"	"	"	100,000
10/4	"	"	"	150,000
12/4	"	"	"	150,000
14/4	"	"	"	20,000
16/4	"	"	"	40,000
4/4 x 4"	Clear face and better		Strips	40,000

BIRCH

4/4 No. 1 Common.	70,000
4/4 No. 2 Common	100,000

All at our Bay City Mills — Can give Service and Quality

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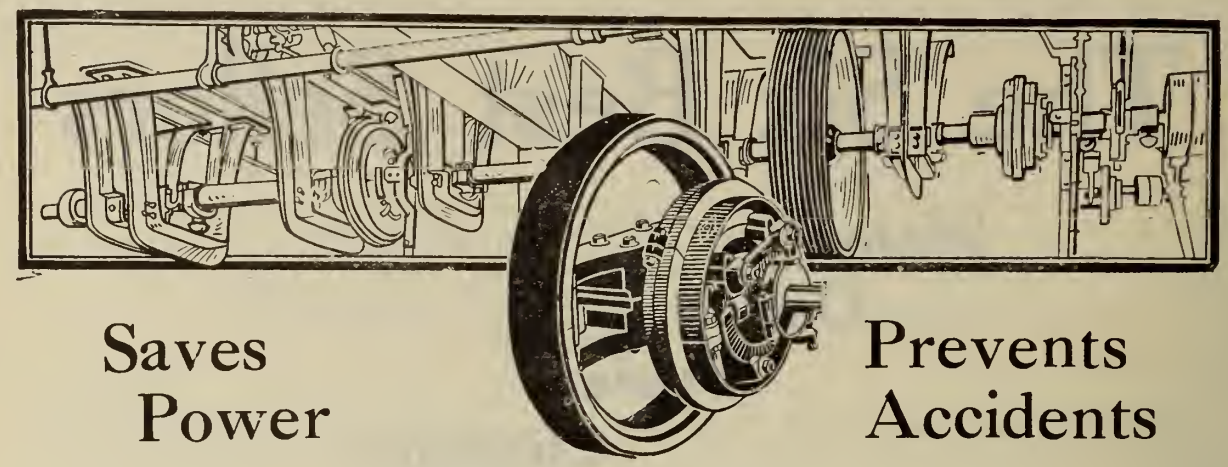
KNEELAND-BIGELOW COMPANY

BAY CITY - - MICHIGAN



Saves Power

Prevents Accidents

You know how often there are occasions when all shafting may not be required.

With the Dodge Friction Clutch you can shut down inoperative parts of your plant without interference with other units. You may not only close down individual machines, you can, if necessary, dispense with a whole floor or section without affecting operations eleswhere.

This closing down of units saves power, and Power Costs Money.

A Dodge Friction Clutch about earns its cost in one year in the power it saves.

The other advantage is prevention of accidents. The timely throwing out of a clutch lever may often prevent a catastrophe.

Specify Dodge Split Friction Clutches on your next order.

DODGE MANUFACTURING CO. OF CANADA, Limited

Head Office and Works:—Toronto
Branch Warehouse:—770 St. Paul Street West, Montreal

Distributors: Chapman Double Ball Bearings Ex Our Stock

Bellgrade

July 1923

Here are some genuine specials that will appeal to all shrewd buyers:

PLAIN WHITE OAK
35,000′ 4/4″ FAS.
90,000′ 4/4″ No. 1 Com-Sel.

PLAIN RED OAK
75,000′ 3/4″ No. 1 Com-Sel
45,000′ 4/4″ FAS.
90,000′ 4/4″ No. 1 Com-Sel.

QUARTERED RED GUM
45,000′ 4/4″ FAS.
45,000′ 4/4″ No. 1 Com-Sel.
23,000′ 5/4″ No. 1 Com-Sel.
84,000′ 8/4″ FAS.
16,500′ 8/4″ No. 1 Com-Sel.

PLAIN RED GUM
38,000′ 4/4″ FAS.
64,000′ 4/4″ No. 1 Com-Sel.
30,000′ 4/4″ No. 2 Com.
12,500′ 5/4″ FAS.
48,000′ 5/4″ No. 1 Com-Sel.
75,000′ 6/4″ No. 1 Com-Sel.
3,000′ 8/4″ No. 1 Com-Sel.

QUARTERED RED GUM (Sap no Defect)
69,000′ 6/4″ FAS.
14,000′ 6/4″ No. 1 Com-Sel.

PLAIN SAP GUM
30,000′ 4/4″ FAS.
31,000′ 4/4″ No. 1 Com-Sel.
89,000′ 5/4″ No. 1 Com-Sel.
74,000′ 6/4″ No. 1 Com-Sel.
24,000′ 8/4″ No. 2 Com.

CYPRESS
59,000′ 5/4″ FAS.
10,000′ 5/4″ Shop.
87,000′ 6/4″ FAS.
41,000′ 6/4″ Selects.
27,000′ 8/4″ FAS.
12,000′ 8/4″ No. 1 Com.

BELLGRADE LUMBER COMPANY, Memphis, Tenn.

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WOODWORKER
and
Furniture Manufacturer

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Vol. 23 Toronto, July 1923 No. 7

Building a Better Market for Millwork

It goes without saying that the millwork industry as a unit is desirous of breaking down existing sales resistance and of increasing the demand for its products. While this is one of the problems confronting each individual manufacturer, it is one that perhaps can be handled best through cooperative effort.

In an address delivered before the members of the Millwork Cost Bureau, Chicago, Mr. L. R. Putman suggested that much can be accomplished in this direction through well planned, educational publicity. In fact it was suggested that the millwork industry is to-day suffering because, with the exception of a few individual manufacturers, it does not advertise. The public know very little about the products of millwork plants.

Here is a thought that is worth considering. The average purchaser of the products of our millwork plants does his buying on the basis of price and price alone, the order usually going to the concern making the lowest quotation. He has little, if any, idea of the value of the work ordered and is thus inclined to object, on general principles, to any price made regardless of how reasonable it may be or of the value offered. This is a situation that requires persistent, concerted effort to correct. While it is likely that price-cutting will always be in evidence, yet were a campaign to be inaugurated to bring the buying public to a realization of what constitutes good millwork, there would not be so much pressure on the weaker members of the industry to reduce prices, with the result that it would be easier to secure a fair price.

There is another phase which should receive attention. Mr. Putman intimates that the easiest and cheapest way to stay in business is to win the goodwill of the entire building industry, including architects, contractors and the general public. This goodwill can be secured through educational advertising. Why not educate the architect instead of cussing him. It can be done and is being done by other industries. In addition the general public is desirous of securing information and usually exhibit a more friendly interest in the things about which it knows. If it knew more about millwork and its value it would be more interested in it and less critical of prices.

The manufacture of metal sash and of substitute shingles are doing much to popularize their products and with a marked degree of success. The apparently ever-increasing demand for metal sash is only another evidence of what can be accomplished through intelligently directed effort, and suggests how the manufacturers of wood products can meet this competition and increase their market.

In conclusion Mr. Putman stated "We've got to popularize the use of millwork and the services derived from it. We must sell sunshine and cheerfulness and beauty and convenience. We must discourage the bleak, unadorned, four-wall house without sun-parlors, sleeping porches, breakfast rooms and cozy corners. There are two ways to increase the use of millwork. One to create a desire for a better and more pleasant place in which to live and the other to create dissatisfaction with present surroundings. Think of the appeal that can be made for a beautiful stairway. Then think of the convenience of built-in cabinets, broom closets, hall closets, cedar-lined closets, kitchen cabinets and the like.

"After some educational work has been done, you would find much less explaining necessary as to prices and conditions now so little known by the public and even by the retailer dealer of millwork products. A better class of applicants and apprentices would be interested in your business. The individual workmen would take more interest in their work and their efficiency would be increased. The financial standing of the industry would be raised and individual bank credits strengthened."

While as far as the Canadian millwork industry is concerned, the idea of a definite, concerted attempt to educate the buyers and users of millwork products may appear to be a bit far-fetched and perhaps utopian, but it is not beyond the realm of possibilities. In any event the suggestions made are not without interest. As the exercise of the imagination and a certain amount of concentrated thought usually precedes action, it is necessary that the points outlined be pondered over deeply before any results can be expected. In addition it is possible that the application by individual millwork manufacturers of some of the features mentioned may work out advantageously and may pave the way for a far-reaching cooperative movement on a larger scale.

Lumber Transfer System Saves Handling

T. H. Hancock, Limited, Toronto, Install New Dry Kilns—Storage Yard Laid Out With Tracks to Accommodate Cars of Green Material—Battery of Ten Kilns Fed From Same Loading Shed and Transfer Track

As a rule in large planing mills and millwork plants the kilns, the dry sheds and the mill are the destinations to which rough lumber is taken after being removed from the green storage yard.

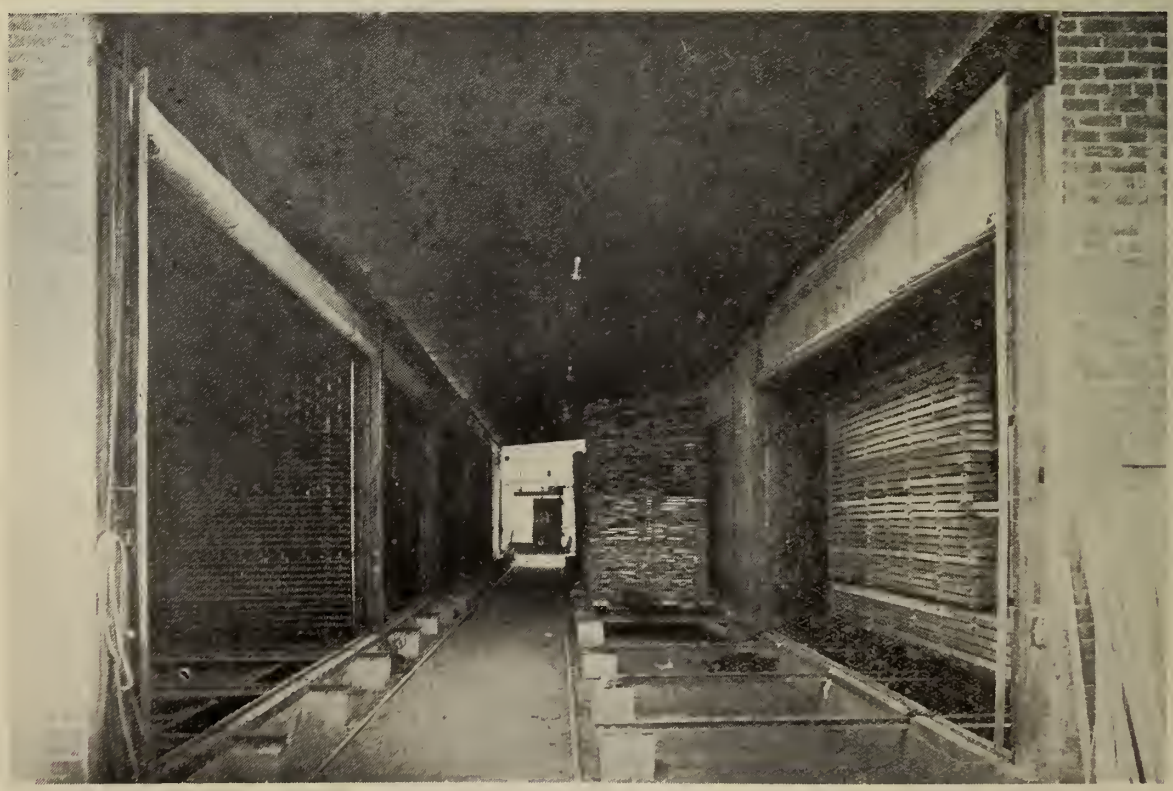
Especially in plants of extensive proportions, the movement of material to the kilns and thence possibly to either the mill or the dry storage units, must be carefully studied and systematized, if handling expenses are to be kept at a minimum. It is here that the expert advice of the kiln manufacturer is valuable in laying out the yards for the different lengths of lumber and the proper sizes of kilns to handle them. Every business will have a different problem in planning the transfer system to and from the kilns. Some firms require large quantities of shorter lengths to serve their trade. Others are required to dry the longer lengths and others again have large quantities of both to season quickly.

The yard layout and kiln installation must of necessity, then, suit the requirements of the plant they are to serve. Careful planning is necessary so that every foot of yard space will be utilized to the greatest advantage.

At the plant of T. H. Hancock, Limited, who operate a large planing mill and millwork plant, located on West Bloor St., Toronto, the "Canadian Woodworker" recently inspected five new Sidman compartment kilns just completed. It is not the purpose of this reference to dwell upon the merits of this widely known make of kiln, but rather to give the reader some particulars regarding the transfer system for green and dry lumber to be employed at the Hancock plant in the operation of the kilns. Before the present addition of the five new kilns, T. H. Hancock, Limited, did their drying in five Sidman compartment kilns which were installed in part of the mill about seven years ago. These are still in good shape. However, the heat emanating from the kilns had so warped the floor of the room directly over the kilns that it was necessary to replace the wooden ceilings with a new type of monolithic cement slabs, thus giving an air space between the floor and ceiling of the two rooms. This work progressed together with the erection of the new kilns making a total of ten up-to-date dry kilns.

The new kilns are a separate unit built of pressed brick, and face the older kilns in the mill. They are also under the same loading shed and the ten batteries are fed from the one transfer track which runs between, with five kilns on either side.

The green storage yard is indicated at the left in the accompanying sketch. The squares represent the cement piers which are 18″ by 18″ at the ground tapering to 12″ by 12″ at the top and are 3′6″ in height. On the cement piers in the yard are laid two



View of loading shed and track of dry kilns at plant of T. H. Hancock, Limited. The new kilns are at the left

tracks to accommodate three track cars which are loaded with green lumber. One of these tracks accommodates cars loaded with 14 foot lumber only. A great deal of hardwood is not more than fourteen feet and with this in view special piling was arranged and kiln facilities. No. 7 kiln or the second in from the railroad spur shown in the sketch was constructed two feet narrower than the other four, the rest are 18′ wide and all are 34′ in length, inside measurement. This arrangement represents considerable economy in kiln space which would not be obtained if the shorter lengths were dried in a larger kiln. The transfer car track is shown running through the centre of the green storage yard and between the kilns as previously explained and thence to the dry shed. When a quantity of, say, 14′ lumber is required to be dried, six of the three track cars on the green storage tracks are rolled onto the six transfer cars without having to handle the material other than transfering the cars. It would not be

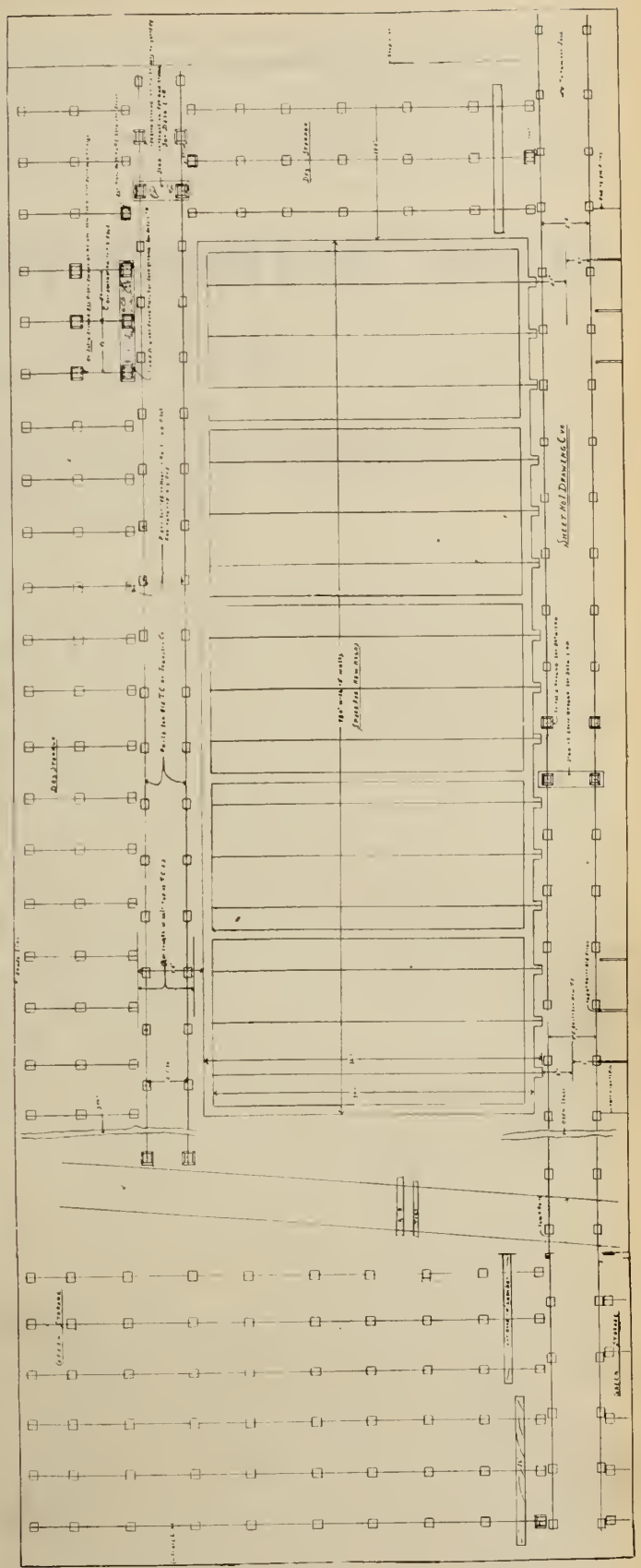
View of the plant of T. H. Hancock, Limited, showing the position of the new kilns

practical to dry less than six cars as this number fills one kiln with enough space for the drying process to function properly. As mentioned previously 14′ lumber would be dried in No. 7 kiln. The three track cars upon which the green material is loaded in the yard would be rolled from the transfer track into the kiln on three tracks identical in dimension to the green storage tracks. Both kiln and storage tracks are 14″ higher than the transfer car track.

When the lumber has been dried it is again rolled into the transfer cars and either taken to the mill if needed immediately, or rolled onto the three track storage accommodation. It will be noted that from the time the green lumber is piled on the cars in the yard until it is unloaded in the dry shed or the mill, the old costly method of handling each piece has been eliminated.

The value of the investment in these kilns and transfer systems lies in the speeding up of handling material in limited spaces. The loading and transfer systems also greatly lessen the cost of having the kilns idle when new cars are to be loaded. The five new kilns are now operating to capacity.

The new American hardwood flooring unit recently installed at the Hancock plant has also been in operation about six weeks. This new and up-to-date equipment is capable of turning out 150 feet of



Layout of the new kilns and the transfer system between the green storage yard, dry storage, dry shed and mill at the plant of T. H. Hancock, Limited, Toronto

flooring a minute. Oak, maple and birch flooring are manufactured in 3/8 inch and 7/8 inch thicknesses and is finding a splendid sale. The material going into this flooring is thoroughy dried in the new kilns and the finished flooring comes from the new machines perfectly matched and with an exceptionally clean surface.

T. H. Hancock, Limited, employ about two hundred hands and with their modern equipment are in a position to meet the most exacting demands for quality and rapid delivery of buyers of sash, doors, flooring and special millwork.

How Can Better Millwork be Obtained?

What the Architect Can Do

Architectural Shortcomings Prevent Full Appreciation of the Value and Importance of Millwork—Prevalence of Distrust Leads to Unfair Practices—Millman is Often Left in the Dark

By J. P. Larson*

(Continued from the June issue)

One of the important duties of the architect, as has already been intimated, is to make sure that his plans and specifications are so drawn that those asked to submit bids on any part of the work are assured that they are bidding on the same thing. Quantity survey in building construction properly belongs to the architects. In this country what little has been done collectively in this connection has fallen to the lot of certain crafts who themselves were forced to undertake this task because of the failure, on the part of those who should have undertaken it, to act. Quantity survey is the proper listing or surveying, from architect's plans and specifications, the quantities of any or all branches of building construction, by someone other than the party who is to furnish and execute the work in question. This listing or surveying of quantities should be correctly and scientifically done and in so thorough a manner that those who are later to prepare, execute, manufacture, or instal the work surveyed, can intelligently figure the cost. So far, unfortunately, this phase of building construction has received no attention to speak of, considered as a whole. In only a few lines, so far as I know, has it been attempted at all and in these it has been done, and is being done, for the members of some group who have undertaken it for the particular craft, only, in which they are interested.

Of those who have undertaken it, the millmen have perhaps gone further in this direction than any other craft. There are many reasons for this. The listing or surveying of quantities of millwork is difficult and highly technical. It should be undertaken only by those qualified. It used to be done, in the good old days, by anybody from the office boy to the "big boss." And in most cases neither of them knew anything about it. With incomplete plans to begin with and the quantities taken by untrained and careless men the foundation or the basis for bids on the millwork must needs be wobbly. We know that in any case a secure structure cannot be reared on an insecure foundation. The listing of millwork must be independent of anything else. Great care must be exercised in its performance. The listing and pricing of millwork should never be combined or entrusted to the same person. The days when it was thought impossible to price millwork without the plans constantly before them so they could see the pictures of the windows and doors have gone forever. That time corresponded to the picture-age in a child's school life. After the child has learned to read, it no longer has any need of the pictures.

Advantages of Listing Bureaus

The surveyor listing the millwork should not only be able to gain from the plans and specifications under consideration the true intent and meaning of the work to be performed, and to grasp the idea of the architect; but he must be practical enough to see and understand the difficulties confronting the millman who is to execute these ideas. To combine these two and to be able to write down and describe concisely and accurately the work to be undertaken; the kind, quality and amount of lumber required for each item; the class of workmanship indicated; the degree of care necessary in the fabrication and assembling of the materials; and to do this in such detail as will enable the millman to correctly figure the cost, is no simple task.

In the last few years a number of listing bureaus, for the listing of millwork, have been established and proven successful. The reasons for their existence are so many that it would be tedious to enumerate them. One of the most apparent is economy. There is but one plan and specification for each building project. There can be only one set of quantities required in the fulfillment of the plan and specification. It is the duty of the listing bureau to correctly survey and list these quantities. After this has been done, one or twenty copies can be made, but the quantities were listed but once. Without a bureau, if twenty millmen were asked to submit a bid on the millwork for a certain building, each one of the twenty would be required to list the quantities for himself—a twenty-time duplication of effort.

Accuracy is another advantage of a listing bureau. Where a central office is established and architects, contractors, and others required to let their plans be sent there to be surveyed and listed, it is apparent that the work can be done by men who become more expert in the work than was the basis when each individual would go to an architect's or contractor's office and fight with someone else for the plans and speci-

*Secretary, St. Louis Millmen's Association, St. Louis, Mo., before the Millwork Cost Bureau.

fications in order to secure the quantities in his particular line. Every old-time millman can recall some wonderful experiences in attempting to list the items for millwork. In some cases the contractor did not even have an office. The plans might be found in cellars, kitchens, dining rooms, or any other part of the house; or in the shed, stable or other out-houses. Where listing bureaus have been established, if someone of the old regime asks a millman to call at his house or elsewhere to list the millwork for a certain job, it is resented as an insult and the contractor in question is respectfully referred to the listing bureau who now relieves the millmen of that work.

It is clearly the architect's duty to encourage quantity survey by the different crafts so as to put competitors on a true comparative basis until such time as the architects themselves will undertake quantity survey in its entirety. I believe that the time will come when this will be done and that the architect of the future will hand a contractor not only the plans and specifications, but a complete quantity survey of all of the materials entering into the project and ask him to submit his bid on the quantities furnished. The imagination is staggered by the possibilities this suggests. It would bring about a revolution in bidding and would eliminate untold waste, expense and grief. Here is something for the architects to cogitate upon.

Advertised Out of Existence

There is one shortcoming of the architects in which the millmen are only indirectly concerned, but which I would like to point out. It may set them to thinking. The architects alone are not doing that which everybody else in the world just now are doing. They are not advertising. But they are being advertised out of existence by those who do advertise. The strange part of it is that the architects do not yet seem to have realized what is going on. Offers all the way from plans and plan-service at the rate of 10c for 60, or 96 for $1.00, to completed structures wtih engineering and architectural service thrown in is heralded in every magazine and trade paper in the country. And in between these two, practically everything which goes into a building is advertised and sold separately depriving the architect of both design and method of construction. The irony of it all is that the millman who at all times has been and is, an ally of the architect is sacrificed on this unholy altar of the ready-made, and instead of standing with him, the architect forsakes him and turns to the very people who are attempting to eliminate them both.

Opportunities for Savings

The field of the architect is much wider than his art. To do himself, his clients, and those working under him full justice, he must keep himself well informed on everything pertaining to a building. He should especially be familiar with market prices of basic materials so that he may take full advantage of fluctuations in order not to call for material in his specifications which is greatly higher in price than others which might answer not only his own, but his client's purposes and requirements. In building construction as well as in almost everything else, it is by no means always the most expensive thing that gives the most satisfaction.

With respect to lumber, in which, of course, the millman is most directly concerned, it often happens that considerable differences in price between the kinds of lumber usually classed together and ordinarily used for similar purposes, exists. In cases of this kind where neither the architect nor the owner particularly care which kind is used, it should be so stated in the specifications and option given the millman to figure the kind which he prefers to furnish. In this way considerable saving could very often be effected.

Substitution and Changes Permitted

One thing which has shaken the millmen's faith in the architect, more than anything else, is perhaps his consent, after the job has been figured and let, to permit substitutions, eliminations, and changes. It is eminently unfair on the part of an architect to specify certain things both in the way of material and workmanship and then later permit the use of something entirely different and perhaps of inferior quality generally. This puts a premium on evasion and dishonesty. It is fraud on the conscientious sub-contractor who bases his bid on strict performance in accordance with plans and specifications. Once it bocomes known to those figuring in an architect's office that these things will be granted, they, of course, are not going to base their future bids on the specifications, but will figure the work with reservations which past experience has taught them will be permitted, and in this way advantage taken of other competitors. Plans and specifications should be clearly conceived and drawn and after contracts based on such plans and specifications have been let, they should be carried out fully and completely. Insistence by the architect that this be done, is the only fair thing and a duty he should not shirk.

Another serious problem to the millman for which the architect must be held responsible is that working details are not furnished him in ample time. The importance of this is self-evident. In many cases the dimensions of materials required cannot be definitely determined until full size details are received. When this is borne in mind, the importance of receiving details early can better be appreciated. In many cases the lumber may have to be purchased. Even if it be on hand, it must be taken from the lumber yard, kiln-dried, and otherwise gotten ready before it can be worked. Other materials, too, may be affected. When an architect delays his working details until such time as the building is practically ready for the work in question, it can be easily seen that delays are bound to result. After the architect's details are received, the work will have to be dissected, supplementary shop drawings made, measurements taken and work tickets made out, before even a start can be made in the way of fabrication. And yet many architects seem to be of the opinion that a week or two in most cases, as far as millwork is concerned, ought to be sufficient after his details are received until the completed work is delivered to the building. Obviously, this, as everybody familiar with conditions knows, is impossible. Many weeks are sometimes required for the fabrication of the articles in question after all preliminaries have been gotten rid of and the materials procured and gotten in condition. The matter of details is of the utmost importance to the millman and should at no time be overlooked by the architect.

The responsibility for having a building properly enclosed, properly heated and thoroughly dry for the reception of the millwork rests upon the architect.

(Turn to page 82)

How Brockville Firm Keeps Its Costs

The Brockville Lumber Corporation, Ltd., Uses a Simple Yet Effective System for Recording Essential Data—Only Two Forms, Filled Out in Duplicate are Required

By A. L.

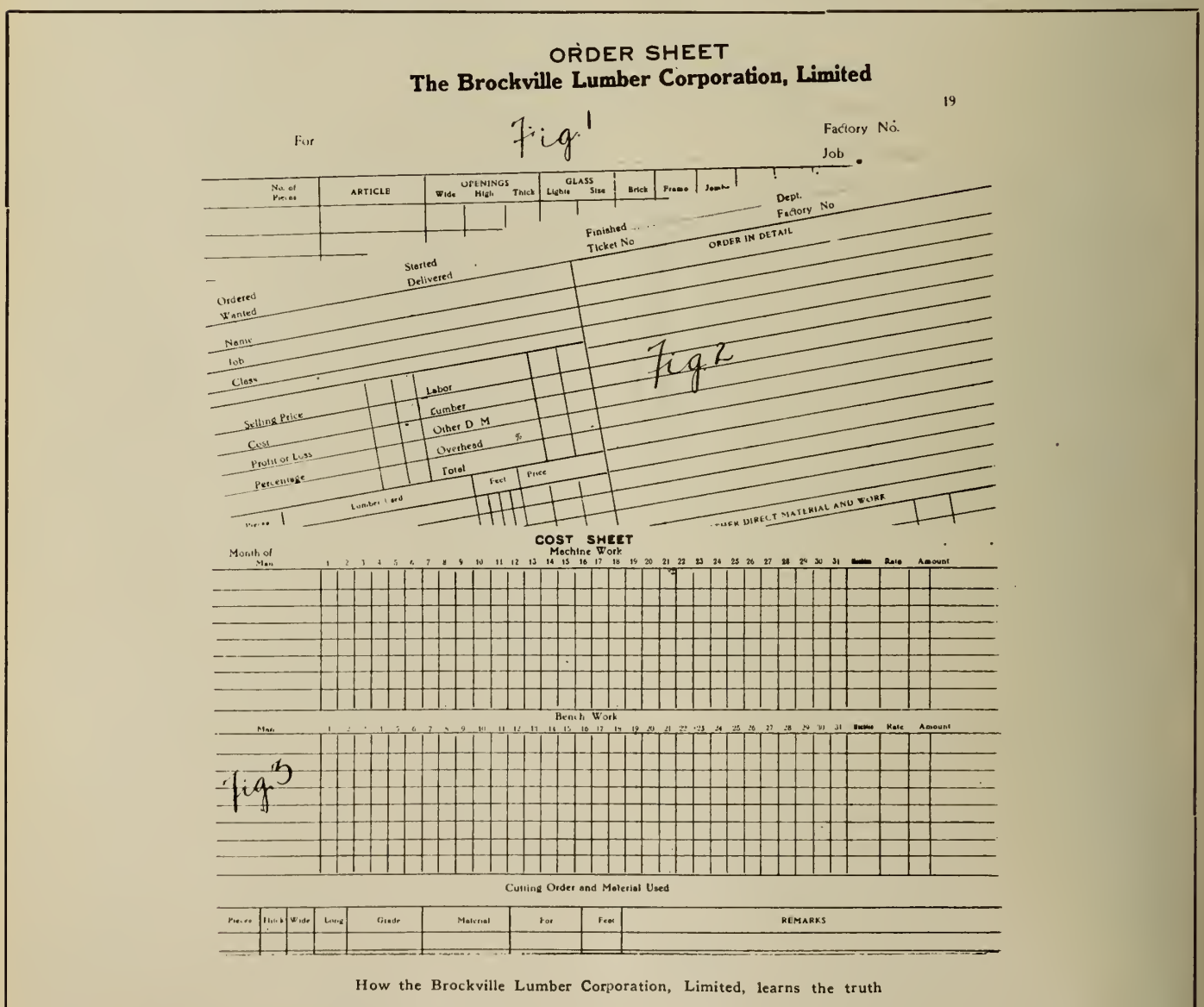
The "Canadian Woodworker" published in the April issue an article which outlined the system of keeping cost records at the plant of J. R. Eaton & Sons of Orillia, Ont. Cost methods are always a live topic whenever lumbermen and woodworkers convene and we are always on the lookout for good ideas that will help to place the industry as a whole on a more scientific basis.

This month we present a similar article on the system of recording cost data employed by the Brockville Lumber Corporation, Limited, Brockville, Ont.

At the retailers' convention in Windsor last January it will be remembered that there was a resolution passed and a committee appointed to study the problem of a uniform cost system for retailers. There was some doubt in the minds of several members regarding this resolution and whether it would be feasible to get retailers to agree on such a proposition. However, it was the general opinion that the fundamentals of a good system should be studied by the dealers as a body and, if possible, applied in their individual enterprises. The members behind the resolution, were not narrow minded; they did not try to foist their opinions regarding details on others but merely asked that fundamentals should be uniform.

The Fundamentals

What then are considered the fundamentals of a good cost system? Fundamentals, as the writer understands it, would not deal with actual figures, but rather the way these figures, (or figures that are missing) should be recorded. This, in other words, would mean having accommodation for every item of cost. Guessing would largely be eliminated by erring retailers and mill men if they studied these



How the Brockville Lumber Corporation, Limited, learns the truth

fundamentals and became interested in recording all expense in a business-like manner.

The biggest bone of contention is in the different methods of applying the burdens and there are as many ways in vogue as there are businesses. Many firms arrive at the same burdens and other cost figures by different methods of calculation. But there are some who, either through poor management or careless recording of their costs, are arriving at figures which mean nothing, so far as doing business at a fair profit is concerned.

The cost forms used by the Brockville Lumber Corporation, Limited, are very compact. Everything relating to a particular order going through the factory is tabulated on two sheets, using both sides, which is at once economical and convenient.

As already mentioned, there are two sheets only, comprising the system, which are joined together by a perforated fold so that the two general order sheets are face up, (See Fig. 1) one on top of the other. Suppose an order is taken, a copy is made by using carbon paper between the two sheets. There are thus two copies of the order. The original is torn away from the carbon copy at the fold and handed to the factory foreman from which he plans and distributes the work. It is here that the convenient way in which the system is laid out is noticeable.

The Cost Sheet

It will be remembered that, on the reverse side of both the original and carbon copies of the order sheets, there are also blank forms. On the reverse side of the original order sheet is the cost sheet (See Fig. 3). Here the factory foreman tabulates the number of hours of each man working on the order, both for machine work and bench work. The number of hours are totalled for each kind of work, and the rate, which gives the cost of the direct labor on the order.

On the same sheet at the bottom is a section called "Cutting Order and Material Used." The foreman also fills this out according to the different pieces of lumber required in the order and any remarks that might bear the cost of the labor and material.

When each job is finished the foreman, of course, turns in this sheet to the office, one side of which is the original order sheet and the other the cost sheet where he has made his tabulations of labor and material.

When the office staff receives this sheet from the foreman they compare it with the corresponding carbon copy they have kept on file when the order was taken. Like the original sheet, the carbon copy has also blank forms on its reverse side (See Fig. 2). On this sheet everything is recorded about that particular job, so that the details of an order may be referred to and all the information obtained in a few minutes.

On the summary sheet, first the name of the customer and the detail remarks are written. The total amounts of lumber used are recorded under "Lumber Used" and the waste percentage added, giving the total lumber material. At the right is another section where the other direct materials are placed and their cost totalled. From the two last mentioned sections the totals are taken and placed opposite "Lumber and Other Direct Material." After the overhead has been calculated the total cost of the order going through the factory is obtained by adding the four totals.

The Fixing of Essentials in Furniture Design

Some Fundamentals that Must be Taken Into Consideration—Importance of Proportion—Significance of Decorations

By S. E. Sanders*

The scope of contributions to the wood worker being necessarily somewhat limited by its character as devoted to a great extent to machine woodworkers and to the productive or wholesale manufacture of interior fitting and furniture, it follows that many of us are liable to select topics which have been well handled in these pages.

It may even happen that old ideas may reappear in slightly different dress, but it is well for older readers to remember that the woodworker is continually falling into new hands, and that subjects which seem over-run to us may contain considerable food for thought for the younger generation so much by way of apology for taking up a topic which has been to some extent well discussed in the past.

The writer wishes to deal here with a few of those matters of more or less importance in the designing of a piece of furniture, viz., the "fixing of essentials" or those features which make for an article's convenience in use. Under this head such matters as the following are determined:

(a) The approximate or definite size.
(b) The kind of wood to be used.
(c) The construction.

What are the features which must be considered in order to determine the size? First, the use that is to be made of the article; second, it may be to match another piece in the same room, or third, the craftsman may be limited in supply of material.

The kind of wood, of course, is regulated by the character of the design, the use of the article, and the price.

The construction enters into consideration even more, as here the craftsman must consider his equipment and regulate his details to suit. He must thus consider, first, the kind of joint or joints; second, the methods of opening, shutting or locking; third, appliances for lifting or moving or hanging.

Every idea originating in the designer's mind or borrowed from a photo or catalogue has the above course to follow in the transmitting of that idea to paper in the form of a working drawn.

Importance of Good Proportion

Proportion is a very very important element to be considered. So many very fine pieces of handcraft seem spoiled through lack of good judgment of proportion. What should we consider in the refining of proportions, (a) of the article as a whole; (b) of each part to the whole; (c) of each part to each other part; (d) of each line within itself, if it curves, or is a broken line, or is turned on the lathe?

May the writer offer here a rule which works out very nicely. "A primary mass must be either vertical or horizontal, according to the intended service, unless prohibited by technical requirements," for example, a davenport is horizontal and a chair is ver-

*Central Technical School, Toronto.

tical,, or a low bowl for pansies and a high bowl for ferns or goldenrod.

Relation of Principal and Subordinate Parts

In design, the central or principal part of the object requires most notice. The other parts should be so far subordinate to it as not to distract the attention from the centre; and yet they should be so united in harmony with it as to be obvious essential to complete the design.

The connection between the principal and the inferior portions of the designs should be preserved by the continuance of some of the leading lines of the principal part to the inferior ones; and whether these lines be straight of curved, they should never be so far interrupted by ornament as to render it doubtful whether or not they are continued; and as the idea of firmness or stability is a necessary accompaniment of good taste in the design of furniture the leading lines of the principal part of the design should descend in such a manner to the base as to give an idea of firmness; as far as the nature of the thing requires it.

Proportion as it depends on the relative magnitude of parts, is sometimes wholly left to the good taste of the designer, and when cases occur where it is within his power, any part in the design must form the principal object, and ought not to have a rival in magnitude; also when the piece of furniture is seen in its best position this principal part should be near the centre of the whole as possible.

Summing up the facts of proportion it all amounts to this: The primary mass should be equal or should have a ratio of 1-3, 3-4. 3-5, 5-8 or some other similar proportion difficult for the eye to detect readily and analyze.

We should avoid slipshod methods and think the problem carefully.

Decoration

This relates to the treatment of the surface. We might place this under the following headings:

(a) Carving border on surface.

(b) Panels carried into or constructed in.

(c) Inlay or veneer.

(d) The designing or choice of accessories such as handles, knobs, escutcheon plates, etc.

When the ornament consists of moulded work only, the piece of furniture is termed plain; but in rich furniture the combined effect of moulded or carved work is necessary. In either case the proportions of the ornamental and plain parts to each other should be regulated by like principles as the magnitude of the parts.

New Sash & Door Factory in Belleville, Ont.

The Brown-Sword & Co., Belleville, Ont., have recently been reorganized and a new company incorporated which will be known as the Angus-Keefer Lumber Co., Limited. The company has an authorized capitalization of $50,000. They manufacture sash and doors and deal in lumber in a retail way.

Prior to its being taken over by the Angus-Keefer Lumber Co., the Brown-Sword & Co. had been established for five years. In 1919 the business was acquired by Messrs. J. E. Angus and N. Keefer. Since then the turn-over of the firm has increased very greatly and connections in centres outside of Belleville have been firmly established.

The active management of the new company is in the hands of the president, Mr. J. E. Angus, who has had a valuable experience in the lumber business in Toronto and Belleville. Mr. A. E. Brown, vice-president, has been connected with some of the largest woodworking factories in Canada for the past 25 years, his duties being largely managerial and executive. He will superintend the work in the factory. The secretary-treasurer, Mr. N. Keefer, graduated in architecture from the University of Toronto in 1914, from which time he had been connected with building operations until 1919 when he and Mr. Angus took over the Brown-Sword Co.

The factory is situated on Station St., Belleville. The building is a modern structure and the plant comprises up-to-date and efficient machinery.

Furniture Industry a Little Slow in Kitchener

"After experiencing a busy winter season," writes a correspondent, "furniture manufacturers in the Kitchener, Ont., district are going through the period of quietness which is being experienced by the entire trade from coast to coast—the dullest in the history of the furniture industry in Canada, according to the opinion of some of the oldest manufacturers. Rushed up to the hilt until a few weeks ago manufacturers are now at wit's ends to keep the regular staffs employed. In practically all cases it has been possible to date to allow matters to take their course without curtailing the staffs to any large extent and to retain confidence that there will be a real revival of business in the fall.

"The present slump in trade is accredited to all those factors which are being met with in many other lines of business. However, it was hardly expected in view of the great activity in building that prevailed last year including the construction of thousands of new homes throughout the country. Manufacturers then were looking forward to an impetus in trade which did occur although its duration was not what had been anticipated. Several causes are said to be responsible for the present conditions. First, there is the severity of the winter and the consequently high fuel bills which drained the purses of the householder. The late spring resulted in the postponement of many purchases in the home, and when the season did open up there were other channels to which the purchasing power of the consumer was diverted, including the motor car sales agent and the tax-collector.

"The experience of local manufacturers indicates that the deflation in trade is general, although the conditions in Western Ontario are better than they are elsewhere barring some exceptions, a number of manufacturers reporting better results in Quebec than in their own province. Looking ahead they see a revival of trade in the fall and there is a spirit of optimism. This is based not only on the apparent tendency of the furniture business to become concentrated, during the fall and winter months of the year, but on the reports received by representatives from different parts of the country.

"All of the score of Kitchener and Waterloo factories are running, the average time being 48 hours a week. Staffs have been slightly reduced but it is not expected that there will be any curtailment. The summer season, however, being a stock-taking period a number of the plants will be shut down for two or three weeks to enable setting the respective houses in order for the next six months, which will help to curtail the output for the time being.

Are You Using Only One Grade of Oil?

Woodworking Equipment Divided Into Three Groups Based on Oil Requirements —Application of Fundamental Principles Underlying Correct Lubrication—Comparison of Value of Oil and Grease

By H. Mooney*

Every manager and operator of a woodworking plant is interested in maintaining a large volume, high-quality, and profitable output of his product, no matter what it is, nor where his plant is located. To this end he invests in modern equipment, hires the best labor his particular market offers and buys the raw material best suited to his purpose.

But there is a fourth factor which is equally vital to successful operation in this industry. No matter how perfectly the machines are designed, and no matter how good the raw materials, the accuracy and finish of the product turned out depends upon smooth and regular operation, secured only by correct lubrication of the moving machine parts.

And no matter how intelligently these machines are handled, the profit in production depends also on the continuous and reliable service of the equipment, in terms of long life and a minimum of shut-downs and replacements, which is possible only by the correct lubrication of the functioning parts.

Friction—The Unseen Enemy of Production

Practically all mechanical troubles, hot bearings, scored journals, broken shafts, high maintenance costs, interrupted production, are directly traceable to one thing—friction between the moving parts of the machine. Where friction is due to poor mechanical adjustment, the correct and obvious remedy is proper alignment of the parts affected. All the lubrication in the world cannot correct faulty adjustments of the machine. Where friction is due to poor lubrication, the neglect of one or more of these three factors determining correct lubrication calls for immediate attention. Friction is indeed the unseen enemy of production in any plant, causing vibration, wear, irregular operation, uncertain and unreliable service, loss of mechanical power and economy and decreased quantity and quality of output.

Chart Number 1

An investment in high speed woodworking machinery implies, therefore, an additional investment in correct lubrication as an inseparable adjunct. With these two investments working hand in hand, substantial dividends are inevitable in terms of longer life of the equipment, better quality and greater accuracy of the finished product, minimum replacements of worn and broken parts and increased production capacity as a result of the elimination of shutdowns for repairs.

Correct Lubrication

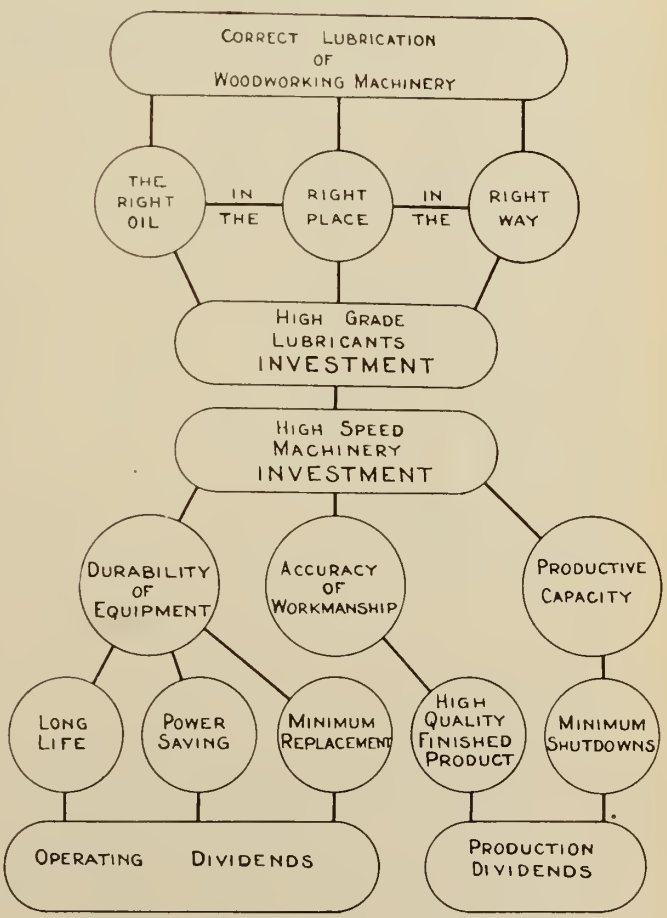
Lubrication is, therefore, an important and essential factor in the operation of woodworking equipment, if operating troubles are to be avoided, production profits increased and substantial dividends earned. The purpose of this article is to show how these desirable results are accomplished by the intelligent application of the fundamental principles underlying the problems of correct lubrication.

The Value of the Right Oil

The principal lubricated parts of woodworking machinery are bearing and gears. The primary function of a bearing lubricant is to form and maintain a complete unbroken film around the journal surface so that the shaft rides upon a smooth slippery fluid film instead of upon the relatively rough frictional surface of a bearing liner. The duty of a gear lubricant is to so coat and cushion the meshing gear teeth that no metallic contact is permitted, and all noise and vibration is reduced to the minimum. The maintenance of such a film under operating conditions eliminates metallic friction, and the resultant wear of parts and loss of horsepower, by substituting instead the practically negligible fluid friction of a lubricant.

The Importance of Right Application and Correct Use

But correct lubrication implies more than the use of the right oil, particularly when we recall the old maximum "a drop of oil on the bearing is worth a pint on the floor." To get the full benefit of the lubricating valve of the proper high grade oil, it must be applied in the right place. The point of application to a bearing will depend upon the location of the area of pressure between the journal and liner. It is



Correct lubrication results in increased dividends

*Manager, Technical Department, Vacuum Oil Co., New York.

always best practice to introduce oil where the clearance space between the shaft and the bearing is greatest. Usually this point is at the top of the bearing cap. When the pressure of the shaft is upward (due to belt tension or other causes) oil can be successfully introduced only at the bottom.

The realization of the benefits of correct lubrication involves also the application of the proper high grade oil in the right way and correct amount. Modern oiling devices for automatically accomplishing this purpose are fitted on or can be adapted to all machines and it is the duty of the operator to see that they are properly adjusted to suit the lubricating needs, no less no more. Excessive feed is not only wasteful of oil but is positively harmful and often lessens the economy and life of the equipment. Insufficient oil is likewise destructive.

Correct lubrication, therefore, implies: (1) The selection of the right oil for the service, (2) its application in the right place, and (3) its use in the right way and correct amount.

A proof of these statements is contained in a further analysis of the various factors and their requirements and is fully supported by adequate data and experience from the field over a period of many years, on all types of machines and under all operating conditions.

Selection of the Right Oil

From a lubrication standpoint, woodworking machinery may be divided into three general groups, according to the work it must do and the operating conditions to be met.

Light Duty

Band and circular rip saws
Band and circular crosscut saws
Band and circular edgers
Bevel and scroll saws
Swing saws
Lath mills and bolters
Lathes and shapers
Bench and buzz planers
Scraping machines
Rod and dowel machines
Boring machines, tenoners

Moderate Duty

Gang edgers and rippers
Planers, timber sizers
Matchers, stickers
Jointers, surfacers
Moulding machines
Sanders
Mortisers and relishers

Heavy Duty

Band resaws
Circulars resaws

The selection of the correct oil for each group of machines depend upon the lubrication requirements involved. , These are determined by analysis of the bearing factors under the conditions of operation.

Size of Shaft—Generally speaking, large shafts run in bearings with relatively large clearance spaces. Comparatively heavy bodied oils are required in order that they may not run out at the end. Conversely, small clearances and light bodied oils are required in order that they may spread completely over the entire bearing surfaces.

Speed of Shaft—High speed spindles require relatively light bodied oils in order that they may quickly follow the journal. On the other hand, low speed shafts permit the use of a slower acting lubricant which naturally has a heavier body or consistency.

Pressure on Bearing—Heavy bearing pressures, due to weight, pull or thrust, necessitate the use of a correspondingly heavy bodied lubricant, which will not be forced out at the bearing ends,but will maintain a complete lubricating film upon which the revolving journal is supported. It follows, therefore, that relatively light pressures can be met with oils of lighter body.

Temperature of Bearing—Since the operating temperature and heat developed in the bearing affects the fluidity of the lubricant, causing it to thin out as the temperature increases, this factor has a vital importance in selecting the oil to be used. High temperatures require a heavy bodied and light bodied oils are adapted to moderate conditions.

Since light duty machines are designed for light work, high speeds, small cuts, they are best lubricated by light bodied oils. Moderate duty equipment, being subjected to more severe service, requires medium heavy bodied lubricants. And heavy duty machinery, handling large unfinished stock, operates satisfactorily only when the proper heavy bodied oil is used for its lubricant.

Application in the Right Place

Usually the point of application of the oil is determined by the manufacturer and he has presumably provided for its introduction into the bearing where the clearance space is greatest. There are cases, however, where mechanical changes are made by an operator in the field may alter the direction of pressure of the bearing. In such cases the point of introduction of the lubricant should be shifted to suit, or bearing troubles may develop.

Too much stress is often laid upon the necessity for grooving of plain bearings. The importance of this, Mark Twain's "death," has been greatly exaggerated. A correctly selected oil, suited to the service, when properly introduced into the bearing and spread longitudinally from end to end, will automatically be drawn under the shaft forming a complete supporting and lubricating film for the journal The only necessary grooving, therefore, consists of a longtudinal groove for axially spreading the oil where it is introduced and suitable chamfered edges at the split of the box for collecting oil and assisting in the formation of the proper oil wedge before the film is drawn under the shaft. These points are well to remember in replacing bearings, since elaborate grooving in many cases destroys the oil film, thereby defeating its purpose.

Use in Right Way and Correct Amount

Practically all woodworking machines are overlubricated, in spite of the fact that many of them are equipped with improved or automatic oiling devices, whereby the oil feed can be controlled by the operator. Among the various systems used in the lubrication of woodworking machines are the following:

1—Bath Lubrication—Where the bearing or gear runs submerged in a reservoir of oil and is at all times surrounded by the lubricant. This system is often used for the lubrication of bronze step bearings and similar service.

2—Circulation System—In special cases ball bearings are lubricated by small oil circulation system, whereby oil from a central reservoir is forced to the bearing and allowed to run to the reservoir for recirculation.

3—Splash—This system is frequently employed for the lubrication of ball bearings and gear teeth.

The moving parts dip into the oil in a reservior and splash it to the lubricated surfaces.

4—Ring Oiling—Bearings of line shafting, counter shafting, motors and main spindles are often lubricated by oil which is carried to the shaft by a ring riding on the journal and dipping into a reservoir of oil.

5—Bottle Oilers—Compact automatic oiling devices, which are quickly fitted to a bearing, and which provide adequate lubrication on less than 1/5 of the quantity of oil ordinarily applied by hand.

6—Wick Feed Oilers—Particularly adapted to the bearings of drives, where they will not be in the way of the operator.

7—Drop Feed—Main spindle bearings and especially ball bearings are frequently fitted with sight feed cups which provide means for a controlled minimum oil feed to the moving parts.

8—Hand Oiling—Auxiliary bearings are generally hand oiled—a wasteful process at best.

9—Grease Lubrication—Where bearings are inaccessible or where it is certain that proper attention will not be given, grease cups are often provided for their lubrication, as a general rule grease is not as efficient a lubricant as oil, inasmuch as its semi-solid state makes necessary the development of a certain amount of frictional heat and bearing wear before it is needed. It is, therefore, not always advantageously adapted to bearing lubrication.

Grease is used, however, for the lubrication of open gears, where oil would not stay on the teeth long enough to give adequate lubrication.

A successful system of lubrication must provide an adequate but not excessive oil supply **continuously.**

From the standpoint of lubricating economy and efficiency the fiirst six methods are perhaps the most desirable, where they can be used. They are automatic and leave nothing to the judgment of the operator except the filling of the oil reservoir at periodic intervals.

It is extremely important to maintain the level in the oil reservoir of splash and ring oiling systems at the proper height constantly. Too high or too low a level results in a churning of the oil, inadequate lubrication, stoppage of the oil rings, or no lubrication at all, as the case may be.

Sight feed cups also give a regular though not continuous supply of oil and the feed must be regulated by the operator. If they are to be economical in oil consumption and at the same time maintain the proper lubricating film, the feed must be adjusted and controlled by the operator to meet the needs of the service.

Hand oiling is to be avoided because it is inefficient and wasteful. In order to assure an adequate supply of oil during the interval between oiling, it is necessary to apply an overdose from the oil can and to hope it will last until the next application. This method should not be used except for minor auxiliary bearings.

Where machines are hand oiled large economies in oil consumption and operating results may always be accomplished by fitting such bearings for lubrication by either bottle oiler or wick feed oilers. In such cases it must be born in mind that these devices are not to be used where they will be in the way of the operator or of the work passing through the machine.

High Grade Oils

It is hardly possible to put too much emphasis upon the importance of using high grade oils for the lubrication of woodworking machinery. This machinery is inherently high-speed in its operation and its spindles may be mounted in either plain or ball bearings. At these high rotative speeds, varying from 1,000 to 10,000 r.p.m. and over, only a very small feed of an oil of the correct body must be used, or excessive fluid friction, bearing heating, or wear will develop. Naturally if the amount of feed must be small, the lubricating value must be correspondingly great. Only a high grade oil can accomplish this result.

Where ball bearings are employed, the requirements are for a protective oil film, the lubrication needs being secondary and relatively small. Such an oil must contain no acid, alkali, grit, moisture or other harmful impurities and it must thoroughly coat the surfaces of the balls and races to prevent pitting or rust. Naturally a high grade oil is essential also for this service.

Chart Number 2

Accurate workmanship upon the finished product, durability and long life of the equipment itself, and the maintenance of a high productive capacity

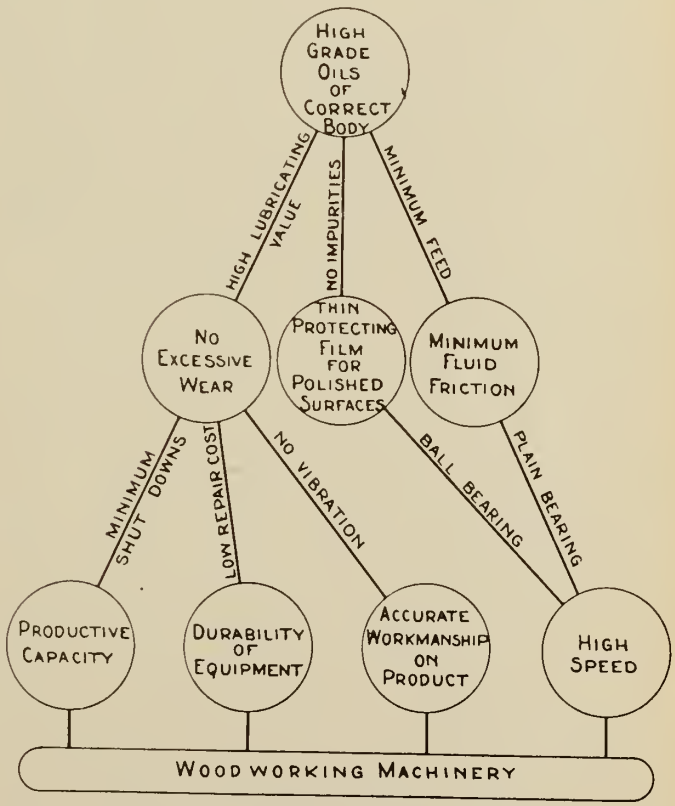


Chart showing the importance of correct lubrication

for each machine are requisites essential to the operation of woodworking machinery. To accomplish these it is necessary to prevent vibration and attain that high standard of operation which results in low repair costs and minimum shutdowns. The elimination of excessive wear of the moving parts as a result of the high lubricating value of high grade oils is essential to maintain such a standard.

The Vacuum Oil Company, New York City U. S. A., has issued a number of well illustrated, attractively prepared publications which deal with the subject of lubrication as applied to specific engines and machines, as well as lubricating methods such as the bottle oiler, etc., which may be obtained for the asking.—Editor]

Woodworkers May Join the N.H.L.A.

Provision was Made at the Annual Meeting of the Association for the Admission of Furniture, Piano, Woodenware and Similar Plants—Will Establish Closer Union Between Consumers and Producers

A year of increased activity and developing interest was revealed in the reports and addresses given before the twenty-sixth annual convention of the National Hardwood Lumber Association which was held in Chicago on June 13th to 15th. The attendance was large and the proceedings marked by optimism and unanimity.

Seventy lumber firms in Canada are members of the National Hardwood Lumber Association, and it is pleasing to record that a Canadian lumberman in the person of W. F. Oliver, of the Oliver Lumber Co., Toronto, was elected a director from Canada. He succeeds George C. Goodfellow, of Montreal. Mr. Oliver will serve for three years. John W. McClure, of Memphis, Tenn., was re-elected president.

Many matters of moment were discussed and President McClure, in his address, forecasted a season of prosperity. He said business conditions were fundamentally sound and the members might look forward with confidence to a period of reasonable activity for the remainder of the year. Some disciples of gloom had predicted that we must some day return to pre-war values, but Mr. McClure stated that clocks were not designed to run backward; the world moves forward and "the sooner we cast into forgetfulness the pre-war standards of value which are gone forever, the sooner will we adjust ourselves to the new standards by which business can be gauged hereafter."

The Association's Stand on Lumber Standardization

Frank F. Fish, the veteran secretary-treasurer, gave a comprehensive report in which he said:—"The National Hardwood Lumber Association neither supports nor opposes the new movement toward the proposed general standardization of the lumber industry. Its attitude is simply that of non-participation. If later on it should develop that the proposed theories are practicable and that they can be carried into effect to the advantage of the industry, there is nothing in the position of the association to restrain it from adopting and applying these theories. The advanced position which the hardwood lumber industry has attained through the operation of the National Hardwood Lumber Association in all matters relating to practical standardization fully justifies that division of the lumber industry in marking time until the remainder of the industry has come abreast of that position.

"During the last year the process of readjusting grades to meet the ever-changing conditions within the industry has proceeded upon the same broad, orderly and evolutionary lines of development as those which have hitherto been adopted by the association in its work of revision and betterment of existing standards of inspection."

The membership of the Association to-day stands at 1302, there being a large addition to the ranks during the past year. Mr. Fish said that for many years attempts have been made to stir up factional strife within the membership and the charge is still heard that "the National Hardwood Lumber Association is dominated by wholesalers and middlemen." While these statements have been conclusively branded as false," Mr. Fish stated, "the lie still persists and is constantly circulated by our opponents who are unable to injure us by statements of facts. In order to determine the exact percentage of sawmill operators and wholesalers within the membership of the association, a questionnaire was sent out in October last, and the results showed 62 per cent. of the membership at that time to be manufacturers of lumber, and owing to the fact that many members conduct more than one mill operation, the total number of hardwood sawmills in operation by our members was 1,006.

A year ago the number of salaried inspectors in the Association was 65. To-day the number is 86, showing an increase of 21. The present rules are the most complete and comprehensive ever published, according to the secretary-treasurer, and are recognized by all branches of the trade. This is evidenced by important gains registered as equitable in the inspection department.

W. F. Oliver, who was elected a director of the N.H.L.A.

Mr. Fish then presented some figures from the Inspection Department for the year ending January 1st 1923, showing the quantity of lumber inspected in each district and market, the amount earned and exact cost of maintenance. Toronto stands well up in the list, and the number of feet inspected during the past year was 10,064,174, the earnings being $15,280.05, and expense $14,687.25. In Montreal the quantity of lumber inspected was 3,505,095 feet, the earnings were $5,334.86, and the expense $5,260.92. Of all the hardwood centres Toronto stands sixth on the list, being exceeded only by Memphis, Grand Rapids, Chicago, Louisville and Cincinnati. The inspection rules have during the past year been printed in French

for distribution abroad and in the province of Quebec where the National Hardwood Association has about 30 members.

Woodworking Plants May Join

Many other matters also came up, including associate membership which may be enjoyed for $50 a year. This membership will include all the privileges of the association with the exception of voting power at the annual meetings. The right to join is extended to furniture, automobile, piano, gramophone, washing machine, woodenware and other plants in this line. The constitution was duly amended to include associate membership, and it is believed that the movement is one which will result in greater strength for the N.H.L.A. It will establish a closer union between consumers and producers and is a visible evidence of the esteem and confidence in which the National Hardwood Association is held by hardwood-consuming interests.

Among those present from Canada at the gathering were:—

John McBean, (McBean & Verrall); R. McDonagh; W. F. Oliver; George Kinnon; John J. Miller, (Anderson-Miller Lumber Co.); R. A. Neilson (Russell-Harris Lumber Co); Frank Kent; J. A. Cadenhead, Toronto; J. E. Baechler, (Goderich Mfg. Co.), Goderich; Lorne Heeney, (Percy E. Heeney Lumber Co.), Kitchener; Joseph Hall, Waterloo, and others.

Among others in attendance was Charles O. Maus, who is also well-known in Canada. Mr. Maus stated that he had opened a buying office for southern hardwoods at Memphis, Tenn., under the management of S. M. Carey, and a selling office had also been opened in Montreal.

W. F. Oliver, or "Frank," as he is generally known, who has been made a director for Canada on the N.H.L.A., is a popular and genial lumberman who has a wide acquaintance with the trade, not only in the Dominion but across the border. The Oliver Lumber Co., Toronto, was the first Canadian lumber firm to join the National Hardwood Lumber Association. This was some eighteen years ago, and a great many Canadian firms have come into the Association since that date.

Is Artificial Lumber Possible?

Extensive Experiments at Cloquet, Minn., Have as Their Aim the Manufacture of Lumber from Immature Trees

Is the lumber of the future to be made artificially from tree material instead of cut from trees after nature has made it? This is a question which, though for a long time under consideration by the technical men of the lumber industry, was only brought to public attention by the recent visit of the Senate Select Committee on Reforestation, to the extensive laboratories of the Weyerhaeuser lumber and timber interests at Cloquet, Minnesota, where the answer to the question is being worked out with infinite care and at large expense.

"The Committee found that in the Lake States a baffling obstacle to reforestation for lumber producing purposes," an officer of the National Lumber Manufacturers Association told the Associated Press, "is the fact that the pulp mills so compete with the saw mills as to make it practically certain that very little saw timber will be grown commercially under present conditions. This is the situation: An owner of timberlands finds that in fifteen to thirty years he can grow a crop of spruce that will be suitable for the pulp and paper mills, whereas in the north it will take him anywhere from fifty to one hundred years to grow a crop that will meet the requirements of lumber manufacture. The natural result is that second-growth timber, not only of spruce, but of other species, is being cut for pulp long before it would be mature enough for profitable lumber manufacture. In other words, the pulp mills appear to be able to beat the saw mills to it when it comes to commercial reforestation. The tendency, therefore, is for paper-making to supplant lumber-making throughout the Lake and northeastern states as rapidly as the latter becomes dependent upon second-growth timber. Thus, there is little incentive for reforestation for saw timber purposes.

"The pulp and paper industries use trees simply as the natural sources of their basic material, cellulose (the material of the solid structure of all plants), which is extracted by a combination of chemical and physical processes in the form of pulp and is then further manufactured into paper. The lumber industry, on the other hand, uses trees as the source of a completed material, wood in the form of logs, the supplemental manufacturing being entirely physical and consisting essentially only of dividing the material in its natural condition into suitable sizes and forms for construction and other uses. It might be said that while lumber is wood, paper is not wood but a commodity manufactured from wood.

Tree as the Source of Raw Material

"Lumbermen have wondered whether it would not be possible for them to follow the example of the paper industry and use the tree only as the maker of raw material, which they could by manufacturing processes convert into lumber without tedious waiting for the tree to do it. If this could be done they would be in a position to utilize young trees and thus compete with the pulp and paper industry in reforestation and sustained forest production, because they would be in the market to buy second-growth wood at the same stage as the pulp men. Nature will create a large amount of wood in fifteen or twenty years, but little lumber. A forest might yield twenty thousand board feet of lumber at twenty years of age, but practically no lumber; for the trees, though numerous at that age, would be small. By the conversion process this forest might yield 20,000 feet of lumber. In another twenty years 20,000 feet more of lumber would be available. Even if the conversion process did not secure more lumber than the natural process in a period of forty years—as it promises to—it would have the immense practical value of realizing two crops instead of one.

"Not only did this vision seem to open the door for growing trees for lumber purposes as regularly and methodically as a farmer produces his annual crops, but it even suggested possibilities of a greater lumber yield per acre than is now possible, and also of higher and more uniform quality. So long as the growing of lumber is left to nature—as it has been since the world began—nature determines the quality of the finished product, and there is necessarily, in the process of converting the tree into the lumber of commerce and industry, an appalling loss of material when the volume of lumber produced from a

tree is compared with the material contents of the tree as it stands in the forest. Most of this material that is waste for lumber-making purposes is utilized, it is true, in other ways, but the fact remains that nature as a direct producer of lumber is most inefficient and wasteful. If, now, the entire cellular structure of the tree from the roots to the leaves could be drawn upon as raw material to be converted by artificial processes into lumber, it might roughly be said that there would be no waste whatever. An idea of what this means may be conveyed by the statement that at present only 35 to 40 per cent of the contents of a tree as it stands in the forest eventually issues from the saw mill in the form of sawn lumber. In the first place there are the wastes, from the lumber utilization point of view, of the logging operations. All of the branches, leaves, small and decayed or malformed parts of the trunk, as well as bark, stumps and roots, are left in the woods. Then when nature's lumber comes to the mill to be cut up into suitable pieces there are further wastes of lumber material—although it may be utilized for other purposes—in sawdust and in the odds and ends left from reducing an irregularly round log into standard sizes of boards and timbers.

"Some practical progress has been made in this direction in the last twenty or thirty years, although without any conception of what it might lead to. Reference is made to the manufacture of wallboard, shipping containers and the like from wood pulp. The dream of the Weyerhaeuser engineers is to carry this development to the maximum and use the tree exclusively as the source of material subsequently to be manufactured not only into minor commodities, but into artificial lumber as a satisfactory and perhaps universal substitute for natural lumber.

Artificial Lumber Stands Up Well

"At Cloquet there is an exceptional plant that already represents the expenditure of $750,000 of private capital in a patient attempt to develop a practical process of attaining an end which when accomplished may revolutionize the lumber industry. In this plant, which is now operating in connection with several large saw mills, the tops and branches of the trees, as well as sawdust, slabs and trimmings in the mills, are all used to make artificial lumber. They are ground to the fineness of flour and the resulting pulverized cellulose is pressed under heat into the conventional lumber sizes. While it is not yet possible to say whether this artificial lumber will have the lasting and other qualities of natural lumber, which make it a material unsurpassed by any other for a great variety of uses, they are sanguine that what they now designate as converted lumber, holds out high hopes of ultimate success. None of this made lumber has been marketed as yet, but it has been subjected to exhaustive technical tests as to tension, stress, elasticity, etc., and practical lumbermen have been amazed to find that the artificial boards seems to have greater stress and tensile strength than boards sawed from the same sort of trees. It is believed that the new lumber will prove to be satisfactory for structural purposes. The experiments made so far seem to show that the artificial boards may be sawed, planed and nailed as satisfactorily as natural boards and that they will take on an attractive finish, although, of course, lacking the charm of the grain effects of natural lumber. So far the Cloquet experiments have been confined to pine, birch and larch, but the experimenters are confident that artificial lumber can be made of any kind of wood that is suitable for paper-making, which includes practically all wood.

"Should the hope of the experimenters be realized the new process will vastly stimulate reforestation in all regions where it takes long periods to grow saw timber, and will result in enormous savings in the practical utilization of the material nature provides."

Largest Building in the World

The American Furniture Mart Building, which is now being erected at 666 Lake Shore Drive, Chicago, will be the largest building in the world, according to the final revised plans which have just been announced.

The Mart will be the largest building in the world by virtue of the fact that its total floor area will be slightly more than 1,600,000 square feet. The next largest building is the General Motors office building. This office building has an area of 1,125,871. This with the area of the laboratory added gives a grand total for the entire structure of 1,321,202 square feet —which is considerably less than that of the Furniture Mart.

The next in size is said to be the Guaranty Trust Building in New York City, this structure having a floor area of about 1,250,000 square feet.

Some of the outstanding features of the new building are:

Located at 666 Lake Shore Drive in the heart of Chicago's new waterfront empire with an unobstructed view of beautiful Lake Michigan; the center of the newest business and hotel district.

Twenty-two hotels, many of them in the Loop, within a few minutes' walk or ride.

Cost of land and the building, $10,000,000.

Sixteen stories high, containing 20,000,000 cubic feet of floor space, of which 1,250,000 will be devoted to exhibition space.

Covers entire city block, fronting 240 feet close to the shore of Lake Michigan (on Lake Shore Drive) and 467 feet on its longest side.

The exterior will be of Gothic treatment, the materials being terra cotta and dark grey brick. The interior will be steel, concrete and tile with marble and walnut trim.

Eight high speed passenger elevators and four freight elevators will be located at the center of the building.

Forty thousand square feet of space on the top floor will be devoted to quarters for the Furniture Club of America.

Convention halls and dining rooms will serve as meeting places for gathering of the industry.

Dining and Bedroom Furniture Prices to Remain Stationary

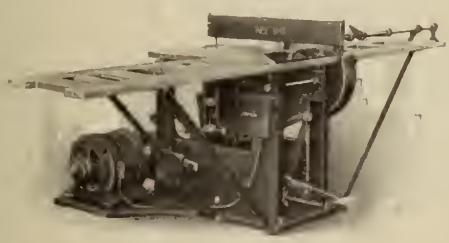
Prices of dining and bedroom furniture will remain stationary during the next year, with the exception of pieces of which mirrors and glass form a part, according to members of the case goods branch of the National Alliance of Furniture Manufacturers, who met at Indianapolis, June 15. Because of high glass cost, prices of these pieces will rise, it was stated.

Machinery & Equipment

Under Swing Cut-off Saw

For many years the Oliver Machinery Co. have built swing cut-off saws where the saw is suspended either from the wall or the ceiling. They have built these in several types and sizes. Now they are offering something that is a radical departure and entirey new for them. It is the No. 96 high speed under swing cut-off saw.

The saw, being of the under swing or under slung type is made for either belt or motor drive. It is operated by means of the foot treadle at the front. By pressing on this foot treadle the saw itself is brought forward to cut to 2" material up to 22" wide or 4" material up to 16" wide. The instant the pressure is relieved on the foot treadle the saw goes



Foot treadle operates saw

back. There is a spring in connection with the foot treadle arrangement to give the saw a quick return so that it is very rapid in operation, much more so than any overhead swing saw.

The saw arbor itself can be locked in a stationary position so that it can be used as a rip saw and by using the mitre gauge it will serve like the ordinary stationary arbor cut-off saw. These are adaptations, however, as the machine is more efficient as an under swing cut-off saw.

For ripping and mitre gauge work it is accurate enough for the ordinary contractor and builder but for the furniture manufacturer it is recommended as a cut-off saw for rapid work.

The machine is self-contained and very compact and is designed primarily for planing mills, furniture factories and sash and door plants for production work.

The machine is guarded with an adjustable saw guard and has an enclosed saw and dust chute. Both of the operator's hands are free to handle the material being cut, making the operator 100% efficient. The machine does not tire the operator as much as the hand pull saw, does much more work than the over-head saw, has ample power and is self-oiling.

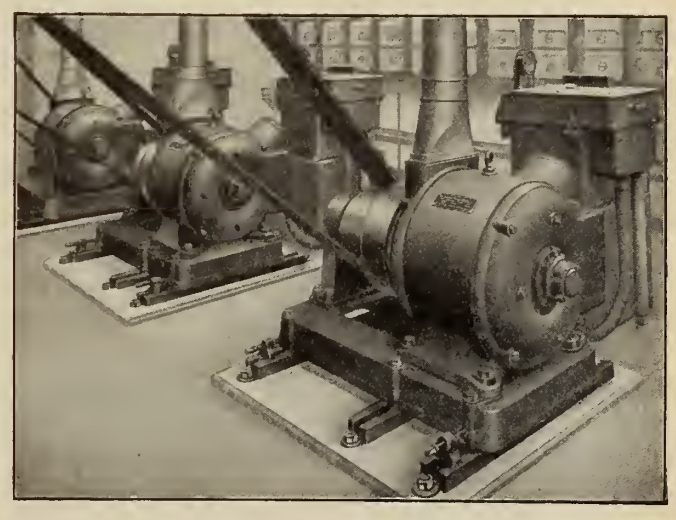
The main part of the table is cast iron 22" wide, 36" long and 33" high. The two auxiliary tables or extensions are of Michigan hard maple fitted with two rollers each and the right hand section is fitted with a positive stop gauge with three adjustable stops.

The forward and back stroke of the saw arbor is adjustable for short and long stroke and the spring mechanism mentioned above prevents jerking and jarring on both forward and return adjustment of the saw.

For belt drive countershaft is furnished and for motor drive an extended sole plate is furnished in place of the countershaft.

New Type of Motor for Woodworking Plants

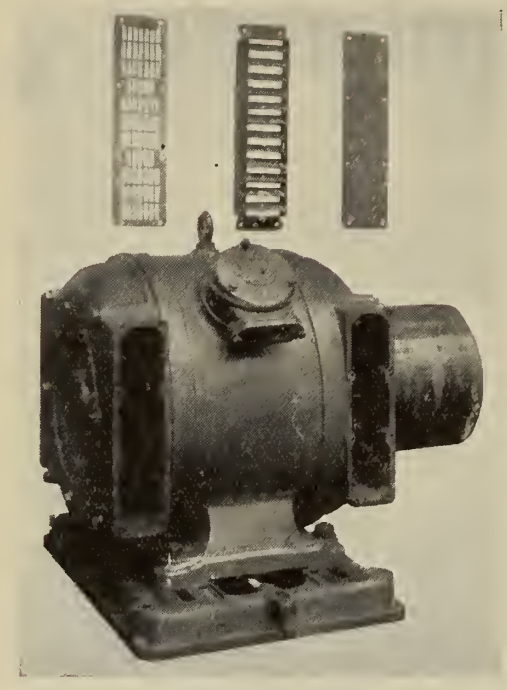
In woodworking factories the prevalence of sawdust is detrimental to the operation of electric motors. When electric drive is used this fact has often necessitated the use of totally enclosed motors instead of the standard open type in which air circulation is provided through the coils by means of openings in the casing. Inasmuch as the power of a motor is governed by the temperature rise, the totally enclosed motor, being so arranged as to prevent circulation of air, is much less efficient for its size than an ordinary open type. This has resulted in the design of special types to give high power output without the possibil-

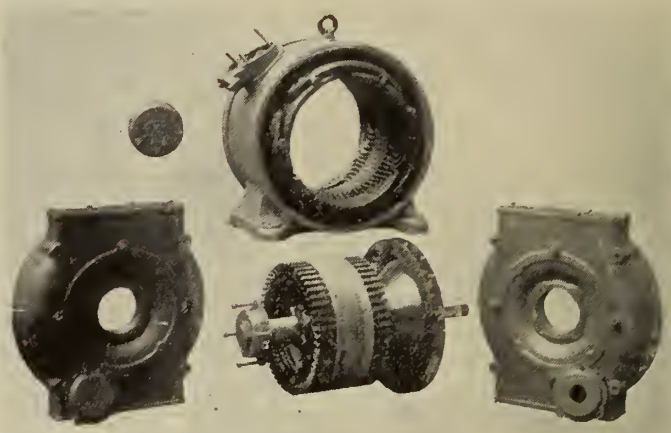


Motors with ventilated pipes attached

ity of sawdust or shavings accumulating on the working parts.

One of these specially designed types is that shown in the illustrations herewith and which is produced by the Lancashire Dynamo & Motor Co. of Canada, Limited, Toronto. As may be seen from the cuts, air is drawn in and exhausted through openings in the side casting. Over these openings mesh, louvres, solid plates or other attachments may be fitted to suit various conditions. With the solid plates the motor operates as a totally enclosed motor with no circulation between the inside and outside of the case. With perforated covers or louvres, it operates as an enclosed ventilated motor and affords a certain amount of protection to the windings. However, where dust or fumes are particularly intense, pipes or ducts may be attached to the frame leading to the outside atmosphere. In that way unadulterated air may be drawn into the motor. If necessary to secure forced draft circulation, a fan may be





Details of construction of specially designed motor

attached to the duct. This type of motor, which is now standard with the Lancashire Dynamo & Motor Co. is certainly well adapted for use in woodworking factories. Installations that have been made already indicate that this particular design eliminates altogether any dust trouble.

Glue Pot With Automatic Temperature Control

At 170° fifty per cent. of the viscosity of glue is lost in seven hours. Glue is sold according to its viscosity, the higher the viscosity, the higher being the price. Therefore, supposing one uses a 30 cent glue, if he heats it to 170°, it is no better than a 15 cent glue. Supposing he uses 50 lbs. a day, then his loss is $7.50 per day. Under-heating is just as disastrous as over-heating, for tests have proven that the strength is also sacrificed in proportion the lower down the scale of the thermometer that you go.

For these reasons the automatic electric glue pot is a wonderfully efficient tool to have in the glue room. The Sepco pot, for example, is claimed to maintain indefinitely a temperature that varies less than 10° at an expenditure of less than 1 kilowatt an hour current per eight-hour working day. The economy of such a device can be measured in terms of time saving in the elimination of spoilage and in the maintenance of customer good-will.

The Sepco automatic electric glue pot is simple in construction. The workman turns on the switch and when the glue reaches the desired temperature, the automatic control turns off the current. It switches on or off according as the temperature drops or rises. In other words, the glue cannot over-heat. There are a number of other special construction features that also help to make the Sepco pot a most desirable appliance to have for all glue operations.

One of Canada's Foremost Industrial Plants Suffers Fire Loss

It was a matter for congratulation that the recent fire which occurred on June 24th, at the plant of the Canadian Industrial Alcohol Company at Corbyville, Ont., destroying one of the large warehouses and some of their smaller buildings, did not in the slightest curtail the activities of the organization, that not one moment's delay occurred in the filling of orders, and that "business as usual" prevailed thanks to a managerial policy of vision and forethought.

Although a huge quantity of pure and denatured alcohol was destroyed, not the slightest inconvenience was caused the trade for the company had on storage in other buildings a supply of alcohol sufficient for requirements for a long period.

The fire had hardly subsided before plans were under way for the reconstruction of the destroyed units and it was learned without interest that such plans are to harmonize with a policy of expansion which the Canadian Industrial Alcohol Company Limited, is carrying out, involving the expenditure of enormous sums.

Kiln Drying Book for Free Distribution

A rather comprehensive book on kiln drying has been issued recently by the Forest Products Laboratory at Madison, Wis., under the title "Kiln Drying Handbook." This was prepared by Mr. Rolf Thelen, who is in charge of the Section of Timber Physics. The principle purpose of this bulletin is to present to the dry kiln operator and others interested in the proper drying of lumber, some of the fundamental facts governing the removal of moisture from wood, based on our present day knowledge of this important question.

Upholstering and Trimming

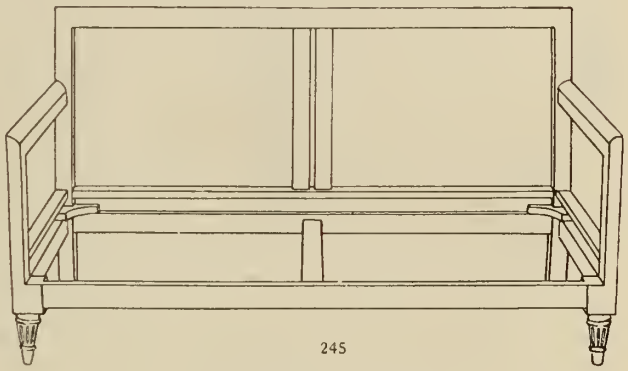
Upholstering a Seat

Spring Foundation is Kept Flat and a Level Platform Provided for Double Stuffing— Some new Principles

The upholstering of the piece illustrated in Fig. 245 brings into our discussion a new principle which will be noticed in connection with the illustrations with relation to the back. The details are outlined in this article which continues the series that has been appearing in "The Upholsterer."

As will be seen in Fig. 246 the spring foundation of the seat is kept flat and when covered with burlaps as shown in Fig. 247, a level platform is provided as a base for the double-stuffing.

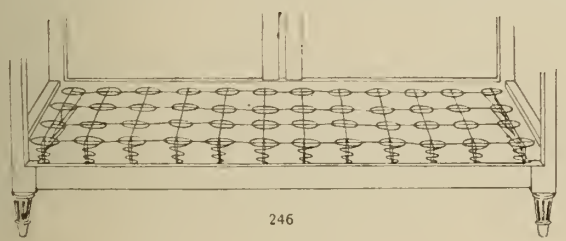
Fig. 248 shows the double-stuffing applied and the front stitched into an edge. In Fig. 249 a layer of hair has been applied above the double-stuffing and about four inches back from the front edge a line of stitching has been sewn through the hair padding to force a depression, so that the platform will fit the shape of the under part of the cushion. In the finishing of the piece, the covering extends back to this depressed line so as to form a facing.



245

Frame ready for upholstering

The next step is the building up of the nosing



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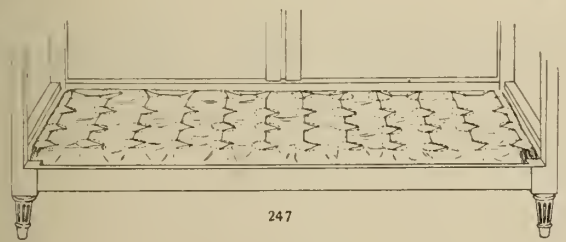

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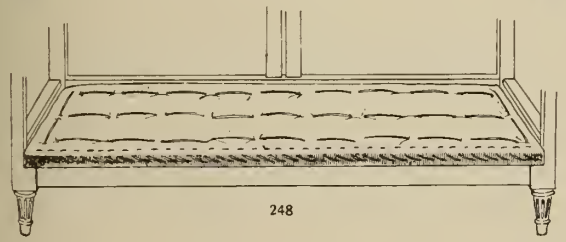

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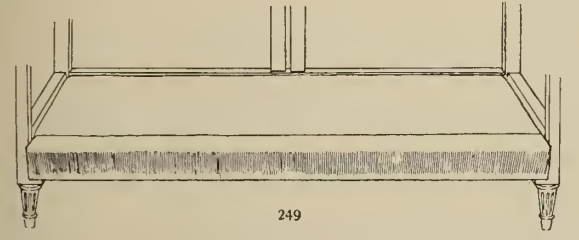

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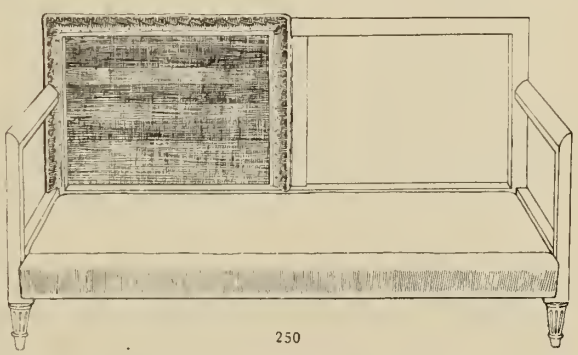

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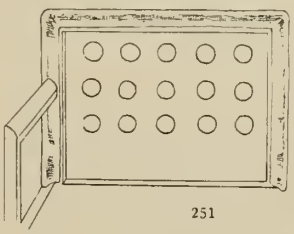

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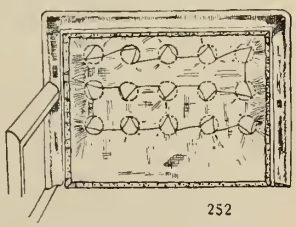

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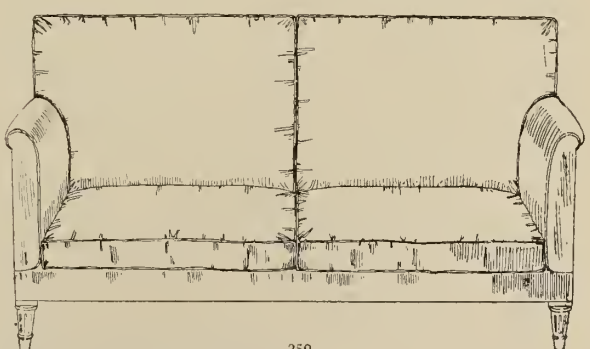

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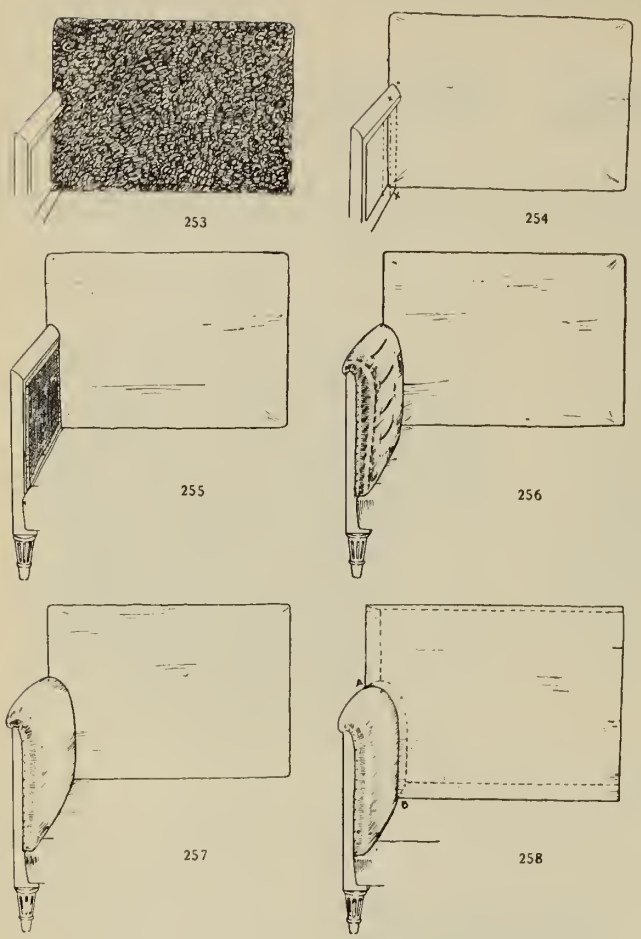
Details of upholstery operations as applied to a deep cushion settee



Illustrating how arms and back is handled

outlining the two back sections as illustrated in Fig. 250. The nosing is about two inches high and is built up on the face of the frame and stitched as shown in the illustration.

The back of the frame is covered with burlaps and webbed to support the springs, the placing of which is indicated in Fig. 251. These springs are tied down into place and covered with burlaps as shown in Fig. 252. The burlaps over these springs should not be drawn too rigidly and for that reason it is well to sew the burlaps to the top of the springs, as we have indicated. There will be a considerable gutter betwen the nosing and the top of the springs because the edge of the burlaps which covers the springs is carried down and tacked on the frame and not attached to any part of the built-up nosing. This plan is followed because it gives greater play to the springs and creates a more resilient foundation for the cushion.

The next step, as shown in Fig. 253, is the application of a hair layer which is put in place and the whole covered with muslin as shown in Fig. 254.

The arms are next to be treated and as the frame which we show is not provided with a tacking strip at the back of the arm, one must be provided as indidicated by the dotted line X-X in Fig. 254. This strip is nailed into place, allowing just sufficient room between it and the covering of the back to permit of the insertion of the final covering of the arm and back.

After the burlaps have been tacked on the arm as shown in Fig. 255, the next steps are to build up the shape of the arm in double stuffing and stitch to the front edge so that it rounds over nicely at the top, giving the shape shown in Fig. 250. A final layer of hair is placed over the double-stuffing and the arm is covered with muslin as shown in Fig. 257.

The back cushions, which in this instance merely stand in place, being unattached, are now prepared.

Proper measurements must be taken to determine the dimensions and a pattern must be cut to fit the shape of the arm so that the curve from A to B of the cushion will fit accurately to the curve of the arm as shown in Fig. 258. The finished piece with all cushions in place is illustrated in Fig. 259.

French Upholstery Comfortable But Bizarre

Often Elaborate and Brilliant, Even Though Designed for Comfort—Does not Impress One Unless it is Considered as Part of a Scheme

Comfort is certainly a feature of French chairs and settees and stools, according to "The Cabinet Maker and Complete House Furnisher." Designs that really set out to cater for ease and leisure achieve their purpose in every line. They make no concession whatever to clumsiness or to the squat, heavy type of furniture that our grandparents and great-grandparents delighted in, or perhaps it would be fairer to say, put up with. Gracefulness has always been a characteristic of French design, and the supreme difficulty of combining comfort and grace has been surmounted with a facility that only win our admiration.

An Historical Handicap

The French designer suffers a little from the traditions of furniture-making he has inherited. In most French period furniture elegance has been placed before comfort, and in looking through any exhibition of late French work the most insistent characteristic is ornate luxury. It is wonderful furniture for a palace, its very elaboration, the florid rococo ornament, and all the complex embellishment, combined in the formation of styles pre-eminently decorative, supremely skilful as regards workmanship, but hardly in accord with the needs of the present time. This is not a sweeping statement which debars all French period furniture from modern rooms, but regarded as a whole it is a perplexing inheritance for any school of designers who necessarily seek inspiration from the past for guidance in their work.

But the French furniture designer to-day sometimes does almost precisely what his predecessor in the eighteenth century did, and goes a long way back in the history of design to gain his inspiration. These occasional excursions into the past in search of ideas have left an indelible mark on the history of French furniture making, and even to-day when so much originality is encouraged and complete independence has been established by many modern French designers in the matter of style, we still find the old tendency creeping back, and it is certainly not a tendency to be deplored. The other examples of upholstery work

illustrated do not express any classic ideas; they are essentially the products of purpose, and, deeply sprung and comfortably cushioned, these chairs comply with every requirement of modern furnishing. It is interesting to see how the utmost value in comfort has been gained in the smallest possible space.

The Materials for Covering

The materials employed for covering do not always accord with our own ideas of practical utility, and we should deem many of them extravagant in use and bizarre in effect. One couch for instance, is covered in black velvet trimed with gold, the woodwork that apepars being black and highly polished, and a line of blue glass studs securing the material to the frame—a most effective, even impressive, treatment, but very difficult to fit in to any scheme of furnishing. And that is the difficulty with the majority of French designs; they are produced by artist craftsmen, who express their ideas in furnishing schemes rather than in individual pieces. The term designer implies a designer of furnishing, and consequently, the models which are exhibited in modern France from time to time at various exhibitions (in the Arts Decoratif Section of the Paris Salon in particular) are all accommodated with their own special setting which accords with their outstanding features. Indeed the decoration and the furniture have been designed together, and the result, however extravagant or ornate and strange it may seem to our eyes, is harmonious in its final effect. French furniture is nearly always part of a scheme, and when we take out some piece and look at it separately we are impressed with its fine workmanship, but cannot help wondering what it belongs to.

The achievement of such unity in furnishing is admirable, but it imposes many restrictions. It shuts out the possibility of variety in arrangement to a great extent, and implies the establishment of unalterable schemes; and when the ideas expressed in such furnishing are particularly elaborate and novel, then it becomes increasingly difficult to escape from them; they are too insistent and brilliant.

A Different Conception of Comfort

When we desire to be comfortable we do not exhaust our ideas with the provision of easy chairs, lounges, settees, and so forth; we go beyond such elementary things. We create schemes that possess restful atmospheres, we study the comfort of the eye, and in aiming at harmonious decoration and furnishing we have as a guide in the back of our minds a definite purpose—peaceful and restful comfort for the vision. But French eyes see differently. Entertainment is demanded. The decorator must never appear as a thoughtful physician, intent on curative surroundings for tired people; he must wake everybody up by masterly displays of ingenuity.

The result is usually extremely elegant, glowing with well-chosen colour, comfortable in the material sense, but too emphatic to be a happy background. So many French mirrors betray a restless note. They are over-decorative, and modern people in modern garments are hopelessly ill-equipped when it comes to competing with ornate surroundings. In the old eighteenth century days when silks and laces, ruffles, powdered wigs, elaborate head-dresses and equally elaborate manners all contributed to the equipment and education of the frequenters of the carved and gilded salons it was possible for people to accord with rococo backgrounds; but the sobriety of twentieth century clothes, so far as men are concerned, is a difficult obstacle in the way of harmony between costume and decorative furnishing. Some modern French schemes take but little account of modern ideas; they go far beyond essential requirements, and sometimes we feel that their designers have strayed a little too eagerly in the land of ornate originality.

Cabinet Making and Woodworking Course in Kitchener and Waterloo Vocational School

Of interest to the furniture trade is the new vocational school that is being erected by the Kitchener and Waterloo Collegiate Institute Board in connection with the new collegiate which will be ready by September 1. Among the departments in the new school will be one for cabinet making and woodworking. While it is not the intention to turn out mechanics, yet the course is expected to be a benefit to the industry in the Twin Cities, although some years will probably elapse before concrete results can be expected, the first stage, as in the case of other courses in the school, being largely experimental and a breaking of ground.

Vocational training among other things has for its object the enabling of young men to find their proper place in life and if the course in cabinet making and wood working will make it possible to reveal latent talent for this work, not only will the youths but also the industry generally benefit. While there is no intention or hope to develop full-fledged artizans or to replace the system of apprenticeship by industrial training, yet it is believed that the course will provide an incentive to young men and contribute to the development of future mechanics.

The collegiate board assisted by the vocational comimttee has received assistance from the furniture manufacturers of the community in framing the course and deciding upon the equipment that is to be installed. Among the furniture men who have been identified with the work to date are E. O. Weber, (of the E. O. Weber Furniture Co.), chairman of the board; J. H. Baetz, (of the Anthes-Baetz Furniture Co.), chairman of the vocational committee; and S. H. Maxwell, (of Malcolm and Hill), chairman of the wood-working sub-committee. The department will be practical and it is the intention to provide a full course in the industry in the course of a few years. One feature that will be taken advantage of later is the chemical plant which can be used for the teaching of the chemistry of finishing. A dry kiln will also be provided as soon the course has been put on a permanent basis.

As in the case of the other courses, the cabinet making and woodworking one will be divided into several divisions to meet the requirements of the Adolescent Act of the province. One division will be for youths who are working and will attend part time-day classes. Another will be for young men who are at the vocational school all day and have not yet sought a means of earning a livelihood and still another will be a night course for adults which, it is expected, will be popular with many men in the factories as it will afford them an opportunity to secure a wider knowledge of the theoretical side of the trade and ultimately help them advance. It is the intention to lay considerable stress on this course.

The co-operation of the furniture manufacturers of the two municipalities has been secured and their shops will likely be used in conjunction with the department.

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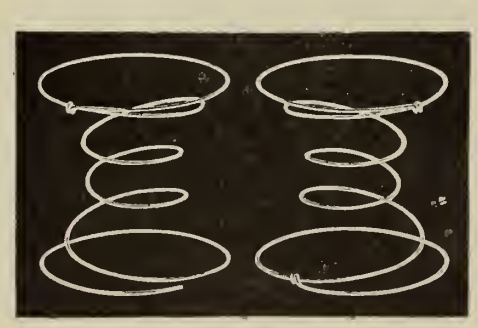

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Proper Finishes for Red Gum

A Cabinet Wood of Fine Figure that Takes on a wide Variety of Finishes—Formulas that Will Give Successful Results

Red gum has become a leading cabinet wood because of its beauty, adaptability and fine workable qualities. Selections of lumber or veneer may be made to meet special requirements, either of highly figured wood or plain wood, quarter-sawed or plain sawed. Veneer is also manufactured in sliced and rotary cut.

Experience has taught dry kiln men how to handle it through the dry kiln satisfactorily, and as a result no more difficulty is had in kiln drying red gum than any other fine cabinet woods.

Some red gum trees produce what is termed "figured red gum." The figure in red gum is fundamentally different from the characteristic figure of oak and many other woods. The figure in quarter-sawed oak is due to the medullary rays with certain modifications by rings of annual growth. The figures of plain oak and chestnut, are due almost wholly to the rings of growth. Gum figure is due to neither. The shades and tones cross the annual rings in every direction, though they sometimes follow them with some regularity, and medullary rays have practically no visible effect. The colors ramify through the wood, obeying no known law of growth or deposit of earthly matter.

Red gum figure resembles that of Circassian walnut. The latter, however, has a feature generally absent from gum. It is a modification of the figure, due to the rings of yearly growth. The deposits of the pigments in the two woods appear to be much the same.

It is hard to explain why some trees are figured and many are not, although it is quite certain that the figure in red gum is influenced by the soil and situation; and it will be seen that figured red gum logs produce figured lumber either by quarter-sawing or plain sawing.

Finishing

For furniture, interior trim and fine cabinet work, the use of red gum gives to architects and designers a wide latitude for taste and individuality in color schemes. Red gum is especially adaptable to a dull, wax or oil finish, and a beautiful effect is brought out in the natural finish, as all red gum, whether plain or figured, is peculiarly pleasing and attractive.

Red gum finished "natural" is rapidly growing in favor among people of taste and refinement who prefer to exercise their own individuality and judgment rather than follow the dictates of historic bias; however, any of the following stains, as well as many others, when properly done, may be employed with entire success and with very handsome results: Mahogany (light or dark); blackwalnut (American); French and Italian walnut; circassian walnut; Flemish brown; Mission and Dutch brown; forest green; silver gray.

Quartered red gum, plain wood, on account of its peculiar grain, is most adaptable for use with mahogany stain, which brings out the changeable color tones, closely resembling mahogany. When either walnut or mahogany stains are used the most pleasing colors are produced. The stain is not applied sufficiently heavy to obliterate, but just enough to leave plainly visable the beautiful grain of the wood.

Note—Red gum has a very close grain and may be finished without the use of a filler, but it is recommended that after the wood has been sandpapered perfectly smooth, that it be filled with either paraffin or pure boiled linseed oil. This will develop a beautiful rich color tone not otherwise obtainable.

Furniture Finish—Natural and Stained

First sandpaper the wood perfectly smooth (this is essential in any wood in order to obtain a good finish), then apply oil. (See note). After the oil has been thoroughly absorbed smooth with fine sandpaper or steel wool and then apply two or three coats of pure white shellac, smoothing each coat when dry. Then apply two or three coats of high grade varnish, rubbing down with steel wool between each coat. The final coat should stand eight days after which it should be rubbed with water and pumice stone first and the next day with rubbing oil and pumice. If a stain is desired, the same process should be followed excepting that a lighter coat of oil may be used and that the finisher then stain the wood the desired color.

Wax Finish—Natural

First sandpaper the wood perfectly smooth then apply a coat of oil as above, then apply two coats of pure white shellac, rubbing down each coat with steel wool when dry, then polish with prepared wax. This will produce a rich color tone and a stain-like finish which is very attractive.

Walnut Finish

To put a walnut finish on gum, the following formula for a walnut stain will give satisfaction.

1¼ oz. walnut crystals
¼ oz. blue-black nigrosene.

Mix with two gallons of water. If a lighter color is desired, reduce the stain half with water.

Before applying the above stain, fill the wood with a light coat of oil. After the oil is thoroughly absorbed smooth with steel wool; on top of this it should receive two coats of white shellac, rubbing down with steel wool after each coat; then polish with prepared wax.

Eggshell Gloss for Interior Finish

First sandpaper and apply oil as in formula No.1, then apply two coats of pure white shellac, smoothing each coat with steel wool when dry; then apply two coats of clear rubbing and polishing, varnish allowing each coat of varnish to thoroughly dry, rubbing down with steel wool between each coat; the final coat to be rubbed down with pumice stone and oil.

Some Practical Finishing Suggestions

A Few Notes Concerning Filling, Rubbing and Polishing—Special Precautions Necessary to Ensure Maximum Success

When it is remembered that the purpose of filling wood is to give it a solid foundation for the finish its importance is at once recognized and given the attention it deserves. All of which sounds trite enough, I know, yet there are finishers who seem to think that any old thing, applied in any old way, will do. They seem to be under the impression that the varnish coats will even up matters. I have done considerable carriage work, and if anybody knows the imperative need for solid, smooth and level finishing, the carriage painter does. There are many inferior workers in wood finishing who may attribute their want of success to wrong ideas regarding the filling.

In the first place it is necessary to make the work smooth and clean, brushing out all dust and dirt from the pores and surface of the wood. The Chinaman when lacquering a piece of work has the room rather damp, and when he is done he places the work in a dark, cool and rather damp room. That is to prevent dust from getting on the finish. And he is as careful as this all the way through. The result is a perfect piece of work.

In preparing a filler for wood you will find this a good rule to follow: Always use a filler that is so mixed that nearly all of the liquid part will soak into the cellular structure of the wood, while the more solid portion, with a little of the liquid, will remain to fill the pores. It is important that the tissue of the wood should be satisfied with liquid, for unless this is done there will be a loss of the liquid from the varnish coats that will prove injurious to the finish. This is why shellac or other priming liquid is sometimes applied before the filler goes on. It, of course, depends upon the character of the wood, which varies from what is called hard or close-pored wood to the very open-pored kind.

Objections to Benzine

I have often read in articles upon the subject of wood finishing that benzine may be used in most cases where turpentine is employed, and that the former fluid is just as good as the latter. I for one do not agree with this. Benzine is all right in its place, but it very seldom answers in place of turpentine. Some advocate the two mixed, but this is also not to be advised. Benzine evaporates so rapidly that you don't have time to get the filler applied properly; you don't have time to rub it in and off as it should be done. You also cannot take as large a section at a time, for the filler will set too soon. Of course much of this difficulty may be overcome by adding some raw linseed oil to it, which will retard the setting to some extent; but oil does not do, as in the case of certain light woods.

Have you ever tried rubbing the filler with a piece of sole leather fastened to a block of wood, and which has its edges turned true to the block? For the best work at least, you will I think, find this simple little tool most satisfactory, taking the place of tow or other rubbing substance.

There are several materials used in making wood filler, and as there are different sorts of wood this is very well. But for the common run of filling and woods the filler should be such as will prove durable, and this means using pulverized silica. A vegetable substance like cornstarch will not do so well, though at one time, in the early days of modern wood finishing, it was regarded as the best.

Sandpapering machines do good work on the larger surfaces of the close-grained woods, but open-grained woods require careful attention, as the fibers may be removed from one part of the surface only to be rubbed into the pores of another part, which will make a surface not fit to receive the filler, which would be likely to work out and leave a number of fine lines, running lengthwise of the grain. This cracking is different to that caused by misapplication of the varnish coats, which always appears across the grain. In order to avoid any danger of this kind it is well to run over loose-grained wood with No. 1 sandpaper after the wood has passed through the sanding machine, rubbing the wood crosswise of the grain. After this has been done be careful to remove every particle of dust from the surface before applying the filler. In using sandpaper by hand, do not bear so hard upon the edges that they will be rounded off.

Formula for Filler

Some finishers still prefer to make up the filler, and whether this is a good practice, considered from an economic point of view, need not be discussed here. However, it is well to know how, even though one does not mix it. Here is a very good formula: No. 1 pulverized silex, mixed to a paste with raw linseed oil, light japan and turpentine, equal parts. If a very light colored filler is desired, then use bleached raw linseed oil. In selecting the ground silex one needs to have a care to see that it is ground from the rock that will give the finest of needle-shaped crystals, for that form of rock silex that yields upon grinding fragments little better than tiny spheres is to be avoided. It makes a filler little better than whiting. This, of course, the workman has no direct control of, but he can secure the right sort by getting it from those who make the right sort.

The filler should set in from 15 to 30 minutes, and for that reason should not contain more linseed oil than may be needed to serve as a binder, and that which is used had better be the refined article of good quality, for it will be less likely to darken with age and spoil the finish. Turpentine should be the principal thinning agent used. For quick work benzine will give the quickest drying thinner.

Cheap furniture may be dipped in a tank, as it is the quickest method, and here as elsewhere silica filler is the best. But this process requires great care and experience. The finest powdered silex is necessary, to prevent settling in the tank. Where the tank is accompanied by an agitator the pigment material will remain in suspension all right, of course.

Rubbing

As to rubbing, when the filler has been on long enough to have assumed the familiar grayish appearance, and is of a dull, flat, dry character, it is fit to rub off. Here great care has to be observed that the rubber does not take out, rather than rub in, the fill-

ing material. One reason for the rubbing out of the filler consists in the fact that too many do not let it become sufficiently set before commencing to rub out, they being apparently afraid that the stuff will set too hard on them before they finish the job. When the filler is but partly set it is impossible to avoid rubbing it out of the pores, especially when a coarse substance, like excelsior, for example is used.

The varnished surface should be perfectly level before the rubbing begins. The rubbing is usually done with pulverized pumicestone, FF, F, O½, OO, being the grades mostly used. Grades FF and F are the finest, and OO the coarsest. The fine kinds are the safest for beginners to use, and likewise for careless workmen. The powder is used with a pad, which may be a bit of rubbing felt of about 3 x 5-in. For uneven surfaces prepare pieces of wood to conform to the curves, and then glue a piece of thin felt on the prepared blocks. An oil that is not gummy is used for moistening the rubbing felts, when oil rubbing is the kind in hand, first wetting the pad with oil, then dipping it in the pumice. After rubbing enough, promptly remove the oily stuff from the surface of the work, as it tends to soften the varnish.

The rules for rubbing are briefly as follows: Don't rub across the grain, for that will give the work a scratchy look. Don't let the rubbing strokes bear heavily at the beginning or end of the job, for that would cause a thin surface, and in all probability bare spots. Don't rub the varnish until it is thoroughly dry, as it will sweat through, and you will have to rub it again, after it has become dry.

Polishing

As to polishing, there are two methods, quick and slow. The first method is as follows: Dip a handful of raw cotton in a mixture of equal parts of sweet oil and alcohol, and rub with a rotary motion. In a brief time the luster will make its appearance, and if you are skilful the effect will be very satisfactory. The other method requires that after the work has been brought to a dead level, an extra coat of flowing varnish shall be applied, which is to be rubbed down with FF pumicestone, and then be thoroughly cleaned. Pulverized rottenstone may be used by taking a so-called chamois skin and rubbing the rottenstone powder over the work with a circular motion. The rottenstone should be left to dry on the surface, and then it should be wiped off with the palm of the hand, still using the rotary motion. The hand should be wiped off every time it passes over the work.—A. Ashmun Kelly, in Veneers, Indianapolis.

Can Varnish Surface be French Polished?

Ottawa, Ont., May 14, 1923.

Editor, Canadian Woodworker:

I believe that you are interested in receiving enquiries from the trade, and I think that my trouble is of general interest; enough that it might warrant an article.

If you will recall an article on finishing given in your July 1921 issue entitled "Finishing By Acid Method" you will remember that the main points are to give the work a number of coats of copal varnish, then felt down and French polish, finishing with the acid method. If I may quote a well known English writer you will no doubt see my trouble.

"It is also necessary here to caution the inexperienced reader against French polishing upon oil varnished work of any description. In such a case the foundation is of so radically different a nature from French polish that the consequences can not fail to be disastrous. The oil varnish is composed of oils and gums which readily respond to varying temperatures, and expand and contract according to the heat or cold to which they may be subjected French polish is, on the other hand, of a more or less hard and brittle nature, and is not acted upon by different temperatures as oil varnish is. Consequently, the pulling of the elastic varnish in different directions underneath the French polish causes the latter to give away, and cracks are soon apparent."

There seems to be a contradiction between these two theories. When we are asked to re-polish an article that has been varnished, and as I have nothing done in the finishing room except shellac finishes of some form or other it often puzzles me whether it is necessary to take off all the varnish prior to French polishing if the job is to be a first-class and lasting one.

Yours truly,
R. L. Greene,
"The Crafts Shop"

New and Better Enamels

Many Years of Research Work Work Have Developed Finishes that Meet all Requirements—Enamel for Fibre Furniture

By A. N. Masse*

Until a few years ago, damar varnish was the only liquid known that could be used to produce an enamel that had a high gloss and remained white. The only method of getting a dull finish was to use a gloss enamel and rub it with pumice stone and water.

Colored enamels were then made, as many are still made today, with a short or long oil and gum varnish depending upon the use for which the enamel was intended.

After many years of research work, enamel manufacturers for several years past have been producing an enamel made from pure oil varnish which does not contain gum of any kind. This type of enamel is used mostly in the architectural trades, because it is impossible to make it dry fast enough to meet the requirements of the furniture trade. It is made with either a high gloss, an eggshell or a flat finish.

The enamel in which we are particularly interested in this article is the type which meets the requirements of the furniture trade. There are two types of this enamel: "Gloss and Dull." Most gloss furniture enamels are made with a varnish having an oil and gum base. The oils used are treated in such a way that the natural tendency to turn yellow, which is characteristic of linseed and of many other oils used, is overcome.

Dull enamels are produced by special manipulation of the varnish in the kettle which eliminates the use of either wax or flatting oil. If the enamelling is done in a finishing room that is free from dust very little rubbing, if any, will be required. This enamel

*Factory superintendent, Marietta Paint & Color Co., Marietta, Ohio.

is made in a great variety of shades, and the liquids used in grinding must be rich enough in oil and gums to dry with an even, smooth surface. They must not penetrate too much into the undercoatings, for, if they do, the flattened surface will be more prominent in some places than in others.

Research work has also produced an enamel, that can be used successfully on fibre furniture. All manufacturers of fibre furniture have experienced much trouble because of the tendency of the enamel to peel off. This is caused by the fibre opening up in many small cracks when any strain is put on it, with the result that the edges naturally roll and peel. Enamel made especially for fibre furniture is not subject to these disadvantages. In using this enamel best results will be had by using a spraying machine.

Advantages of Walnut Outlined

"The story of American Walnut" is the title of a very attractive book of some 46 pages, issued by the American Walnut Manufacturers' Association, Chicago. It is essentially a booster for walnut and outlines fully the special characteristics that make this wood one of the finest cabinet woods we have. The first part of the book traces the use of walnut down through the ages from the time when it was first used, according to existing records, in King Solomon's time. This historical section traces the use of the wood in Italy, England and America, mentioning such well-known designers as the Adams Bros., Hepplewhite and Sheraton, whose influence has been manifest in all furniture productions since their time. A chapter on the "Advantages of Walnut To-day" outlines the outstanding characteristics of the wood. The text also indicates the prevalent figures in walnut and how to identify the genuine wood and avoid the substitute. A brief chapter is devoted to walnut interior work. Some very excellent half-tone illustrations add to the attractiveness of the little volume.

Manual for Dry Kiln Operators

"Practical Kiln Drying," a manual for dry kiln operators, owners and superintendents of woodworking plants and vocational schools, is the latest edition to the published literature on this topic. The book is by E. U. Kettle and is published by the Periodical Publishing Co., Grand Rapids, Mich. The author states in his preface that he has endeavored to state plain facts in a plain manner, and a perusal of the contents indicates that he has lived up to this specification. The highly theoretical phases of kiln drying have been omitted so that the contents of the book take on a practical aspect that will, undoubtedly, appeal to practical men such as kiln users and operators. The volume seems to be exceptionally complete in that it covers all phases of kiln drying and all the recognized systems of seasoning lumber. The text is well illustrated with clear photographs and sketches. An idea of the scope of the work is best given by the following list of chapter headings:—Reasons for Kiln Drying Lumber; Yard and Dry Kiln Layout; Principles of Lumber Drying; Dry Kilns and Methods of Testing Them; Testing Lumber; Types of Kilns; Uniformity in Drying Lumber; Keeping of Records; Kiln Operator's Troubles; Kiln Maintenance and Repair; Air Conditions in Factories; Remodeling of Kilns.

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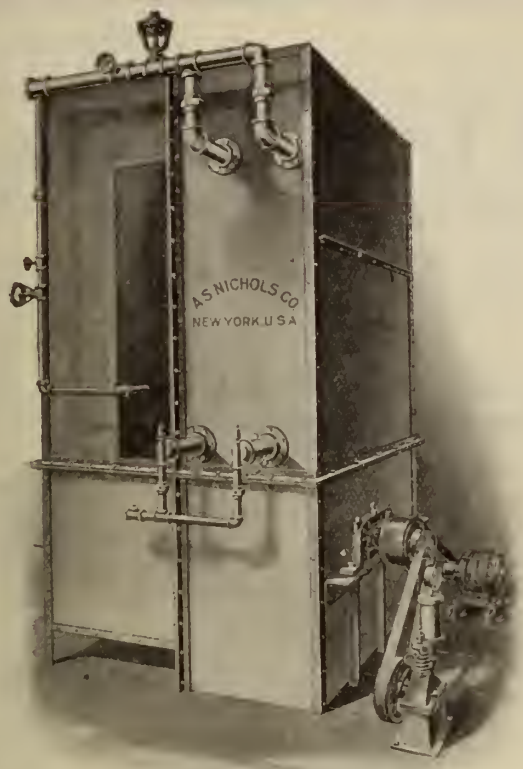

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Veneers and Panels

Veneer and Panel Manufacturers' Association Passes

Becomes Affiliated With National Hardwood Lumber Association—Plywood Group Will Continue as a Separate Organization

On June 12th and 13th the National Veneer & Panel Manufacturers' Association met in the Auditorium Hotel, in Chicago, for their regular midsummer meeting. Sixty-seven members registered. The president, H. E. Kline, of Louisville, who presided at the gathering reviewed in his opening message the present situation of the veneer industry and the conditions that led up to the merger of the National Veneer and Panel Manufacturers' Association with the Plywood Manufacturers' Association a year ago. He called attention to the deficits which the old association had passed on to the new organization and the difficulties which have been experienced since. Mr. Kline urged the veneer industry to rise out of its lethargy and through co-operation and organization attain to a higher status.

The report of Commissioner M. Wulpi was largely an elucidation of the relationship of production, stocks, demand, consumption and values and an explanation of the part the manufacturer had in controlling these. The lesson that was brought home was that production depended upon consumption.

Other reports were presented including one on a "Code of Ethics" by Mr. T. D. Perry. This latter was approved and the code adopted.

Mr. Thomas W. Howard, chief cost accountant of the Fabrication Production Department of the U. S. Chamber of Commerce, presented a very interesting address on "The One Best Way in Cost Accounting." An abstract of this paper is appearing in this issue. Mr. Howard was followed by Cost Engineer Potter, who gave a report on the progress being made in the installation of cost systems. The extent to which manufacturers valued this phase of the Association's work was explained by Mr. F. L. Zaug, chairman of the cost committee.

During the first day of the meeting the plywood group held a separate meeting at which 18 members were present. In the report of Commissioner Wulpi the pushing forward of the Association cost plan was urged. This phase of the work was further explained by Cost Engineer Potter, and Mr. F. L. Zaug,, chairman of the cost committee.

General discussion was then taken up and production and market situations discussed. It was the general feeling that a slump was noticeable at the present time but all agreed that fall business would be good.

An important move that was taken at the meeting of the Association was the decision to affiliate with the National Hardwood Lumber Association. It appears that there was a certain lukewarmness among many members in connection with the National Veneer and Panel Manufacturers' Association, and the suggestion made by the hardwood men that they affiliate was well received. The result is that the National Veneer and Panel Manufacturers' Association ceased to exist on July 1st and will operate only as a subsidiary of the National Hardwood Lumber Association.

The Plywood group did not accept the suggestion and voted that they would at once return to their former plan of organization as the Plywood Manufacturers' Association.

The Future of the Veneering Field

By R. Neubecker

Methods and procedure employed in veneering and panel making have made such large strides that the fondest dreams of observers in the veneering field of but a few years ago are far surpassed.

Much of the credit in this respect is due chiefly to the perfection in recent years of the waterproof glues which have made panels and other veneered products impervious to dampness and moisture, resulting in an immensely increased adaptability. So much wider has the field for veneers and panels become that to predict the wide range of use that they will occupy in, say, ten or fifteen years hence would be mere folly, for in that time these products will be put to uses such as we have no idea of at the present time. The daily press from time to time cites instances where built-up lumber or plywood is not only on a par with any solid lumber product, but even far superior in some cases to steel or iron, besides being much lighter in weight.

The building trades show possibilities of absorbing larger quantities of veneered or built-up woodwork than at present, were it not for waterproof glue, builders would not dare to attempt the use of so many veneered products. While waterproofed veneered doors have given satisfactory service the field of exploition in the building line is stil open to some enterprising manufacturer who will place on the market veneered window frames and veneered interior trim, making it possible to not only have the doors of mahogany, but also the windows and the trim.

For ages the human race has employed leather for soling footwear, yet it would not be surprising if within the next few years millions of people will be walking in shoes on which the sole is made of built-up plywood. Foreign countries for some time have experimented with this idea, and not long ago a factory located at Norway, Me., was put in operation turning out wooden soles with an initial capa-

city of three hundred pair of soles a day. If this proves successful, we will in the near future be going to the woodworker or the panel plant to have our soles replaced. A sole of thin plywood glued up with waterproof glue will prove to have better wearing qualities than the best leather of the present day and will not absorb dampness as leather does.

As far as airplanes are concerned, there is a strong possibility, especially if freight carrying airplanes become as numerous as the present-day flivers, that the machines will be a strictly plywood proposition, cloth wings of the present day being replaced with thin waterproofed plywood panels. In fact, certain experiments in this regard have already been conducted with some measure of success.

In short, the veneer and built-up plywood industry is standing upon the treshold of an era of prosperity and demand. Built-up plywood and veneered products are the coming thing. And in years to come many of us may think back to the present days and wonder why it took us so many years to become fully acquainted with all the good points of the veneered or laminated product.

Uniform Cost Accounting for Veneer Plants

The "One Best Way" for the Veneer Industry is the Adoption of a Uniform System Rather than Individual Methods—Many Advantages to the Collective Study of Costs

By Thomas W. Howard*

Although we have been hearing of the necessity for cost knowledge for many years now and the novelty has worn off of almost every conceivable argument for cost accounting, there are yet in this country many manufacturers who have little cost machinery in their business and whose cost reckonings are of the crudest character. For example, I heard the other day of a manufacturer in one line whose consistent practice it was to arrive at his selling price by taking the cost of the raw materials and multiplying the total amount by three. Another in the same industry went to greater refinements and much extra labor, inasmuch as he took the cost of his raw materials, multiplied it by two and then added 30 per cent. Although this will appeal to us all as being crude figuring, its existance up to recently might have been condoned, for until within the last few years knowledge of exact cost methods has been very limited and there has been but little standardization in cost accounting.

The excuse of inexact cost-accounting methods, however, no longer holds. Every industry may now arrive with certainty at cost accounting methods that will give at least reasonably satisfactory results. I am not going to bore you with a recital of the numerous and oft-quoted advantages of cost accounting, for you know what they are and although they may tend to convince on the desirability for cost accounting something more is needed if American business is going to make use of the best in cost accounting.

Results of Cost Accounting

In lieu then of a statement of the advantages of cost accounting. I would like to put before you the four important results that ordinarily should be secured from cost accounting endeavor. They are the results which in my own practice and experience I have found to be the most important, and in developing a cost system for others, in which I have had some experience, I have constantly striven to secure them.

First, a profit and loss statement for the business as a whole, revealing the current profits or losses of the business and supported by similar information for major departments or main lines of product.

Second, a balance sheet showing currently the condition of the business in terms of its assets and liabilities, that is, its cash on hand, its accounts owed by customers, inventories or raw materials, semi-finished and finished products, and on the other side of the balance sheet the amounts owed to suppliers, to the bank, to bond-holders, and lastly, the net worth, that is, the equity of the stockholders.

Third, a statement of product costs, revealing the current costs of the various products made, which may be compared with the selling prices obtained for the same products. Such a statement is an aid to those engaged in selling the company's products, enabling them to push the profitable lines, drop the unprofitable ones, increase prices if necessary and desirable, and decrease them if justified.

Fourth, statements of current costs of plant operation, including figures on labor-operation costs, losses due to scrap and defective work, and overhead expenses, classified according to departmental responsibility.

Of course there are many other results that come from good cost accounting, but if these four are kept constantly in mind a worth-while return on the investment will inevitably be secured.

The One Best Way

I now turn directly to the subject I have chosen "The 'One Best Way in Cost Accounting." Have you found it?

Although I am not in contact nor closely familiar with the peculiar and difficult problems in the veneer industry and of cost accounting for it, I am convinced that there is the "one best way" and I hope to make clear to you what this "one best way" is and how your industry may secure all of the numerous advantages accruing from its use. I think it is likely that this subject will give you to understand that I am bringing to you a cure-all in the form of a ready-made cost system which I expect you to use. That is not at all the case, for I am not in the stationery or loose leaf business and I know from experience that no such system will fit your needs.

It is the belief of the Fabricated Production Department, of the Chamber of Commerce of the U. S. brought home through more than three years' work with more than one hundred different industries, that each industry should address itself to the problems of cost accounting." No hard-and-fast or cut-and-dried

*Before the meeting of the National Veneer and Panel Manufacturers' Association.

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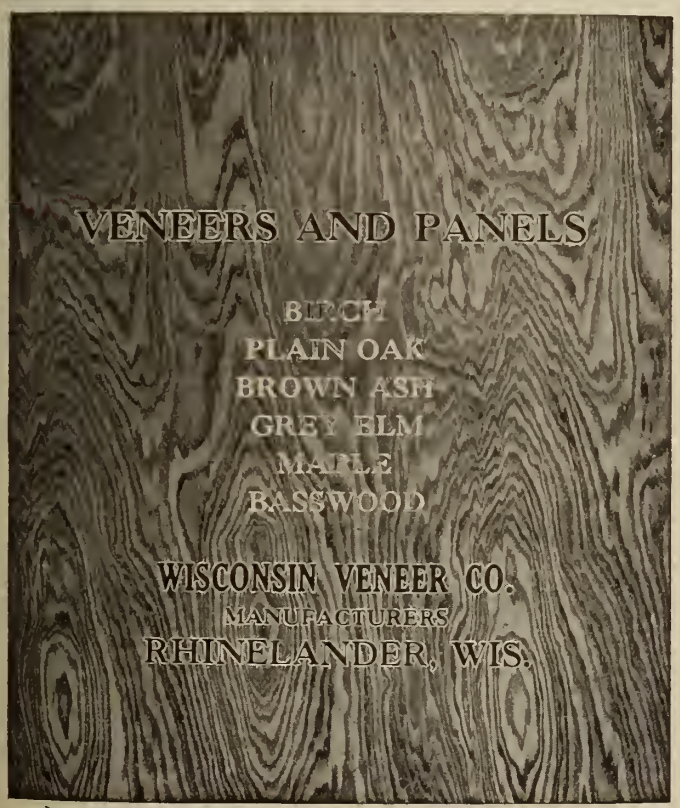

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uniform methods. Let there be no mistake in what is meant by this expression, "uniform methods of cost accounting." No hard-and-fact or cut-and-dried system will work in the plants of all members of the industry, but in the same industry there is a similarity of procedure, of production methods, and of operating problems that make possible the determination of uniform principles along which the cost accounting of the industry should proceed.

Uniformity of Practice

Individually, the members of the industry may after years of experimentation find these principles and develop their cost methods in accordance therewith, but that is expensive experimentation. So, it is the recommendation of the Fabricated Production Department that each industry, through its trade association, study the cost accounting problem cooperatively and develop uniformity of practice.

Many industries have found, after more or less successful initial endeavors along these lines, that the best results are secured only when the vast majority if not all of the members of the trade association have convinced themselves not only of the need of good cost accounting, but of the superior advantages of uniform methods of cost accounting for the industry, and have lent not only their moral support to the movement, but in a broad-minded way have contributed their financial support and the services of their cost accountants.

We have found that this desirable condition is brought about most readily and quickly when as many members of the industry as possible participate in the activities incident to the development of the methods and this is accomplished by the organization of a general committee, frequently termed a cost council, comprised of the cost accountants of the industry. For example, one industry has a cost council consisting of forty cost accountants. Within this cost council there is a working cost committee of ten and this committee is directly charged with the technical development of the uniform methods. They are aided materially by a cost engineer who functions just as the mechanical or electrical engineer would toward his clients, by rendering advice and technical assistance in the development of the methods. Cost councils of this character are in operation in numerous industries, for example, in the refractories, or fire brick industry, in the paper industry, in the milk industry, in the anti-friction bearings industry, and so on through a diversified list.

Why Uniform Systems Have not Been Adopted

I am aware, of course, of the fact that your industry has a cost guide to the uniform methods which have been developed and hence I assume your problem of the development of the methods themselves has been solved and that today you are interested in securing the wider adoption of these methods. The suggestions I have made with respect to the organization of a cost council may not appeal to you as practicable in your industry, but I urge it upon your consideration for what it may be worth. There is one thing of which I am convinced and that is that it is necessary to arouse members and non-members of the association, alike, to the desirability of the use of uniform methods and whether this be done through the medium of a cost council or through visits of your cost engineer and literature disseminated from your association offices is a matter for determination in each individual case.

Possibly the reason why manufacturers in some industries have not convinced themselves of the advantages of the acceptance of uniform methods is because they have not seen clearly the difference between cost accounting as developed by individual application and cost accounting under uniform methods. There is also the fear that expensive and carefully-devised systems of their own will have to be abandoned and further expense gone to to install the uniform methods. It is our experience, ordinarily that this is not the case, for the uniform methods usually can readily be adapted to really worth-while systems already in use.

Let me now attempt to bring out as clearly as I can the reasons why there should be uniform methods of cost figuring in an industry as contrasted with the development of individual systems by the members individually. I know there are those who will say that "Uniform methods of cost figuring is an activity that is all right, but our company has got a pretty good system and we are getting along well enough." Let us go back of such a statement and see the underlying and fundamental reasons why the industry should undertake the development of uniform methods as contrasted with the development of good cost accounting systems by the individual members independently of one another. We in the Fabricated Production Department have given much thought to this matter and have observed the conditions in so many industries that we believe thoroughly in the importance of these activities and the results that accrue to the members of the industry that accept the methods devised.

What Uniform Cost Accounting Accomplishes

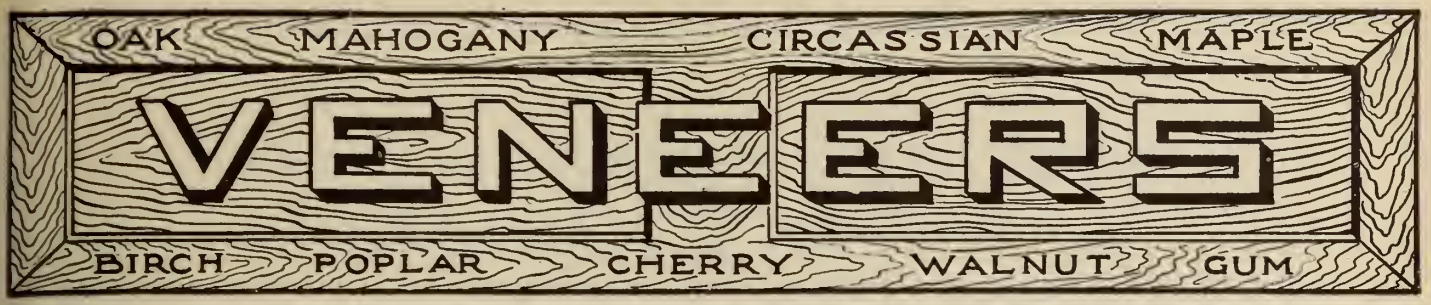
1—Provides once and for all the "one best way" to figure costs, thereby eliminating expense experimentation by all members of the industry individually and independently. This in itself is a clear statement and probably needs no amplification, but to apply it to your own line, as I understand its problems, you have a difficult problem to solve in connection with the pricing of your materials, oftentimes expensive veneer woods, like mahogany. Surely a conference, discussion and final decision will develop the "one best way" to handle this matter of the costs of raw material.

2—Results in a better-informed competition on the part of the members of an industry. Certainly the industry in which every member has a knowledge of costs is a fortunate one and under such conditions there is the least liklihood that prices will be set without relation to the cost.

3—Strengthens the position of the industry in dealing with governmental or regulatory bodies. As an illustration let us refer to the income tax. You all know what that means. probably most of you have found it desirable to adopt your general accounting more readily to supply the figures required by the income tax department. Take the matter of depreciation alone. The Fabricated Production Department has secured from the Commissioner of Internal Revenue acceptance of the propriety of making co-operative depreciation studies. Such studies are made to develop typical rates of depreciation to serve as a guide or criterion to cover usual conditions of use and production for a given industry. Industries which have carried such studies to a conclusion have been much benefited thereby.

4—Tends to convince the manufacturer, who otherwise would fail to see the advantages of good cost accounting, of the desirability of adopting the

(Continued on page 78)



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HAY AND COMPANY, LIMITED

Woodstock - Ont.

Uniform Cost Accounting for Veneer Plants

(Continued from page 74)

methods which his competitors are successfully using. We all know that in every industry there are those who are willing to operate their businesses by rule-of-thumb and are content therewith largely because they believe that their competitors are doing it or that the prices set by their competitors properly reflect their costs as well. They are the ones who are only convinced of the advantages of cost accounting when they see the larger and more progressive members of the industry following uniform methods.

5—Reveals lines of individual products, within the industry, which have been marketed by all members of the industry on an unprofitable basis. Nearly every line of industry finds out some time or other that there are individual products manufactured by all the members and sold at unsatisfactory prices. Uniform cost methods reveal such conditions with certainty.

6—Makes possible comparisons of costs on specific items so that the accountants by comparing costs may discover errors in their methods of figuring and thereby further improve the uniform methods. The use of uniform methods means that the cost men of the industry can talk the same language, that is, if they discuss the cost of a certain size standard veneer they will know that they all have the cost in the same way. Such cost comparisons are helpful in revealing errors in cost figuring not known to exist and in perfecting cost procedure in complicated situations.

All of these advantages are real, not imaginary. All may be secured by your industry. I invite your close study of them. The legality of this "one best way" in cost accounting is questioned by some. There are those who hold that they are subject to governmental prosecution if co-operatively they study cost accounting methods or compare cost results for purposes of improvement of methods. This is most certainly not the case. The day of secret meetings and agreements on prices, which years ago were indulged in by some industries, has passed, for not only is it illegal but it is unecomonic. In the long run such efforts get nowhere.

Here is what Mr. Gaskill, chairman of the Federal Trade Commission, has to say on this point in his letter of December 12, 1922, addressed to Mr. McCullough, manager of Fabricated Production Department. "I have previously expressed my firm belief that cost accounting is a legitimate trade-association activity, and subsequent consideration has simply strengthened this conviction. Collective, analytical study of the cost accounting furnishes an invaluable supplement to the individual cost-accounting work. Comparison of results, analysis of results, and the study and discussion of these results lead to the improvement of methods and the increase of efficiency. To prohibit collective studies of costs for the purpose of their analysis, the detection of errors, and the improvement of methods is to shackle educative progress." But in taking up activities to secure uniform methods of cost accounting by an industry whose members universally are sincerely and seriously intent on securing the advantages of such uniform methods, there is a pursuit of the economic as well as the legal. The "one best way" in cost accounting means profit for the industry that finds it.

Necessity for a Correct Diagnosis

Those Who Experience Trouble with Veneers Often Fail to be Specific When Seeking Remedy—Full and Accurate Information is Needed

By L. B. Lebarge

Suppose a man went to a physician and said, "I am sick, please cure me," and then said nothing more about himself or his manner of living, the doctor might be able to find out what was wrong with the man; but it is ten to one he could not tell the cause of the trouble even with the patient before him. How much more difficult it would be if the man merely wrote to the doctor and told him he was sick, or had a pain somewhere. That is precisely what a lot of people do who have trouble with their veneered work and want to know the cause and remedy.

I get a great many letters about veneer troubles; but most of them merely say: "Our veneer comes loose at the edge," or, "The veneer checks along the joints," or, "The joints open after the stock is finished." I have sometimes thought the seekers after information try to give as little information as possible. It is absolutely impossible to make positively correct diagnosis of troubles without some information regarding the way of doing the work, for the reason that in most cases there are several things, any one of which, may cause the same trouble. For instance a man writes and says: "We have trouble with fine checks in our walnut veneer, showing up after the stock is varnished and rubbed. Can you tell us the cause and how to prevent future trouble of this kind?"

Veneer Wrong Side Up

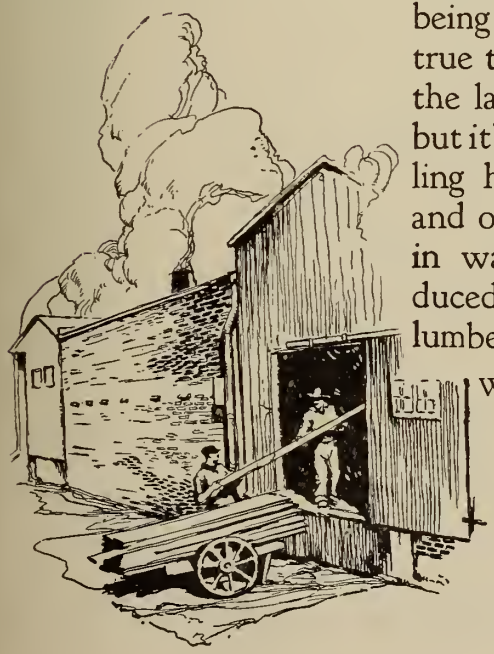
In a concise statement of that kind there is nothing upon which to form an opinion as to the exact nature of the cause of the trouble complained of. Fine checks may be caused by laying the veneer with the wrong side to the face. In making butt joints to match it is necessary to lay the right side of one sheet and the reverse side of the other to the face in order to make the figure match, and unless the veneer has been exceedingly well cut, fine checks will show in the reverse side after the stock has been varnished, although frequently not until after it has been rubbed. Then again the man laying the veneer may not be able to distinguish between the right and wrong sides, and the stock is all laid with the wrong side up if there is no matching to be done.

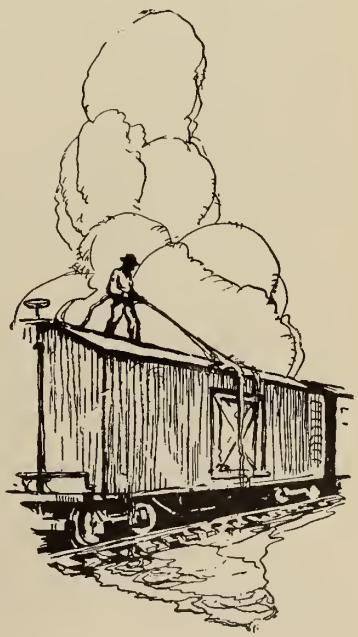
Sometimes a letter will say that only part of the stock gives trouble with checks, although all the veneer in the batch was taken from the same flitch. Well, perhaps part of the veneer was laid with the right, and part with the wrong side up.

Then again, fine checks may result from laying the veneer without having it properly dried, or it may be properly dried beforehand and allowed to take up the moisture from the glue before the pressure is applied. This will sometimes cause checking in only part of the stock. If a considerable number of panels

EVEN THE CHAIRS WENT!

Palissy, perfecter of china enamel, sacrificed his furniture to fire his kiln. But the credit of his achievement belonged not so much to fuel and kiln as to his indomitable courage, enthusiasm and intelligence. ¶ We like to think of the Wood-Mosaic spirit as being somewhat akin to Palissy's. It is true that our lumber kilns are among the largest and best in the country, but it's the skill of our men in controlling heat, humidity and circulation and our care in testing and shipping in waterproof cars that have produced millions of feet of kiln-dried lumber without complaint.





WOOD-MOSAIC COMPANY, *Incorporated*
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WOOD MOSAIC *Lumber*

are put in the press at one time those placed in the bottom of the press have a much longer time in which to absorb moisture from the glue than those put in later, consequently those at the top of the press may be free from checks while the others are not. One can readily see the difficulty of making a correct diagnosis of a trouble that may be caused by so many different things, when he has neither the subject nor data concerning it before him.

A man may complain about the veneer coming loose at the joints. Trouble of this kind may be caused by the vener being laid with the taped side down, and the veneer coming loose from the tape. Or it may be that the joint is starved and the veneer is ready to come off at anytime, and if stained with a water stain the latter gets under the edge and supplies just the force to cause it to loosen. Of course, if the veneer were properly cemented down the stain would have no effect on it to cause it to loosen. A water stain will not effect a well-made glue joint because it dries out too rapidly. But if we do not know how the work is done we have nothing except our knowledge of the many causes to guide us in making a correct diagnosis.

Open Butt Joints

Open butt joints are sometimes caused by taping the joints before the veneer has been dried and drying after. The openings may be caused by leaving too long on the glue without pressure. Ordinary veneer shrinks but little endwise and is sometimes dried after taping without serious injury to the joint, although it is not a wise thing to do because there is always danger of it opening a little. But crotch and butt joint stock is of such peculiar formation that it swells about equally in all directions, at least certain parts swell or shrink as the case may be. If this stock is dried before it is taped and allowed to take up moisture before the pressure is applied the parts with the end wood at the top and bottom sides take up the moisture rapidly and swell. The expansion may be but little, but as each end swells and presses one against the other the parts that do not swell are pressed from each other, leaving a joint that is tight in places and open in others. A strong tape will help some in holding the ends close, but not enough to resist entirely the force of expansion. If it does refuse to yield the expanding ends will separate from the tape and overlap.

On the other hand, if this kind of veneer is taped before it is dried, then dried before it is laid, the reverse of what has been described above takes place; the parts that swell with moisture now shrink and separate, so that the parts that would be open when the veneer swelled with moisture from the glue are the ones that are open when the drying is done before taping. It is not uncommon for men to make a perfect joint only to find it tight in places and open in others, after it is taken from the press.

Causes of Depression

A man writes in and says he has trouble with depressions in his veneer and is unable to scrape it to a perfectly level surface without danger of cutting through in places, and leaves us to guess as to the cause, for it cannot be more than guesswork with such meager information to guide us. We know that rough crossbanding will cause depressions, and that is the first thought that will come into our mind; but there are other causes. If we do not know whether the stock is three or five-ply we are at a still further loss to ascertain which cause is the one that applies in the particular case. Suppose it is a three-ply panel, or top, and the veneer is laid on chestnut. The glue is allowed to become tacky before the veneer is placed and is put in the press to wait until others are built up in the same way until the press is full. By the time the last piece has been put in the press the wood has taken up most of the moisture from the glue and it has become quite stiff and the surplus cannot be pressed out nor evenly distributed. This of itself will cause depressions, but as the more porous parts of the wood take up a greater volume of glue and moisture they swell up more quickly than the harder parts and receive the greater pressure; then when drying out they shrink back in a corresponding measure, leaving a depression.

There are some men who appreciate the importance of giving full and accurate information regarding their methods of doing the work so as to get an accurate diagnosis. The following extract from a letter is a good illustration of what such a letter should be: "We are having trouble with our edge joints opening after the stock has been finished, especially on large buffet tops. All the tops do not open, but probably about half of them do. Our veneers and crossbanding are dried to a moisture content of 5 per cent; face veneer and crossbanding are laid in one operation. Our presses are large and of the hand-screw type and we put in about 25 tops at a time. They are taken from the retaining clamps the day after they are built up, after which they are stripped with ¾-in. strips and dried for 72 hours in a temperature of 120-degs. F. The stock is then cleaned up and assembled and sent to the finishing room where the various finishing coats are dried in a temperature of 120-degs. F. We omitted to say that we use animal glue and apply it to the crossbanding with a modern spreader.

"We have never discovered any serious openings in the joints prior to sending to the finishing room and have wondered if the varnish drying room is the cause. The varnish drying room is ventilated with an electric fan which carries off the gases and affords circulation; the room in which the stock is dried after leaving the press is not so well ventilated, but we use a fan for circulation,"

After reading a letter such as that above, one is not at any great loss to decide on the cause of the trouble. In the first place a little too much time is allowed to elapse between the laying of the veneer and the application of the pressure to those tops in the bottom of the press, which accounts for half of them opening at the joints. This half takes up too much moisture, which causes the veneer to swell before the pressure is applied. Then the drying conditions are not the best, which accounts for the joints not opening before going to the finishing room. The humidity of the first drying room is too high and should be remedied by better ventilation, such as that in the varnish-drying room. Better ventilation would not prevent the joints from opening, but would open them before the stock reached the finishing room and prove that the cause was not in the latter department. The solution of the problem is to put fewer tops in the press at one time so as to avoid swelling of the veneer, and when drying have sufficient ventilation to carry off the moisture as it is evaporated.—Veneers, Indianapolis.

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Oh, you weary city-dweller, impatient for the long deferred vacation—whether you be architect or cabinet-maker or skilled craftsman—while you labor to design the varied treasures which can be created from wood, do not forget the cooling ripples, the soothing restful ripples, the gently wavering, long enduring ripples of Veneer which you can offer to other city-dwellers as weary as yourself.

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How Can Better Millwork be Obtained

(Continued from page 48)

In residences and other buildings, particularly where hardwood paneling, cabinet work, etc., is to be used, the importance of this cannot be too strongly stressed. Many architects lay down stringent rules in their specifications for the handling of the millwork in the shop, and its care there. They even go so far as to mention the degree of moisture permissible in the wood, sometimes reducing it as low as 4 per cent. and 5 per cent. and then permit this material to be delivered and installed in buildings which have not been dried out, which are not enclosed, and have no heat. It is a well known fact that kiln-dried millwork, although containing only a slight degree of moisture at the time of leaving the mill, when delivered into a damp building, will quickly absorb moisture and swell or expand and then later on a corresponding contraction takes place after the building dries out, or when the heat is turned on. The result is shrinkage, open joints, cracked panels, "damned" millwork and ruined reputation to another millman.

Practicability Sacrificed for Effect

Architects sometimes needlessly sacrifice practicability for effect. This frequently happens in the case of veneered doors and other veneered work which is used in exposed places. Veneered work should never be used in unprotected situations. Where the sun and the rain, the wind and the frost have its way with veneered work, the results are bound to be disastrous. Only woods which can be used in the solid should be used in such cases. It is far better to have a painted white pine or a cypress door which will stand up, than to have a mahagony or quarter-sawed oak veneered door beautifully finished in its natural color which will go to pieces in a few months or a year. This is almost sure to be the result where veneered work is used where it is not protected from the weather.

In the last year or two the use of steel frames and sash is becoming more frequent in architects' plans and specifications. It is bad enough to have steel frames and sash, but it is even worse to have steel sash specified to be used in wood frames. Not long ago we ran across a specification of that kind. The particular job was a residence. Now to my way of thinking, steel sash in a wooden frame in a residence is an abomination. I do not believe that this is either good architecture or good art. My esthetic sense revolts at the idea. To me such a thing is repulsive from the standpoint of good taste and use alike. In the first place steel frames and sash are bad enough, goodness knows, in commercial buildings and factories, but altogether impossible for dwellings. There are no livable qualities in steel or iron. Most of us will never be happy behind iron bars.

I have been trying for some time to find out and to solve the question as to why architects recently seem to favor steel frames and sash as well as certain trim in their work. The only reason that I have so far been able to find, (and this is a reason that I myself have advanced) is the fact that the manufacture of steel frames and sash have advertised their wares in architectural journals and popular magazines until they have convinced the architects that they are superior to wood frames and sash. About the only valid reason, however, that I have yet found in these advertisements is that the use of steel frames and sash permit more daylight. But this is of itself not a convincing argument in their favor considering the present price of coal. It is a well known fact that approximately triple the radiation is required for glass surfaces as compared with other surfaces. It will, therefore, be seen that the use of steel frames and sash is a continuing burden of increased heating cost.

Merits of Wood Sash Not Advertised

One reason which I believe appeals to the architect and is an inducement to him in the use of steel frames and sash is that it relieves him of work and worry in preparation and installation. A steel window is a standardized article. The manufacturers have worked out a certain type and furnish the architect with complete measurements for wall openings. He is told that all that is required of him is to leave an opening in the wall and they will do the rest. Now, the same thing can be done in the case of wooden frames. But usually stock designs of wood frames and sash are not satisfactory to the architect. The millman has never attempted to force either design or construction upon him, deeming that the architect's prerogative. And it seems that because the millmen have not let it be known how good and valuable wood frames really are and how long they will last, not even the architects knew anything about it. Therefore, when advertisements of steel frames and sash are so worded that they leave the impression on the careless and the thoughtless that they are more desirable and more durable than wood, it is time for someone to come out with the truth.

In principle, and particularly so far as millwork is concerned, I am opposed both to standardization and to specialization. And the architect who is not, is in my estimation, holding himself too cheaply. Standardization and specialization are, of course, essentially the same. But some millmen, it would seem, get confused on this point and refer to specialization as the opposite of standardization. We must bear in mind that special millwork is something entirely different than specialized millwork.

Standardization Impossible

Standardization, so far as architecture and millwork are concerned, is as foolish as would be an attempt to standardize the flowers of the field. And standardization in general spells ruin. It is the duty of the architect to help stem the tide of this unhealthy manifestation in our national and industrial life. What are we to standardize; design, dimension, or quality? So far as the millman is concerned he controls none of these. The architect does control them. But the architect cannot standardize the millwork until he first standardizes the building where it is to be used. If standardized houses is the thing and standardized millwork is desirable, then the architect and the millman together can bow themselves off the stage. They have at once become superfluous. Standardized building plans and specifications, from a pigsty to a church can be had for next to nothing; and standardized millwork from frames to fitments is manufactured, advertised and sold from Dan to Beersheba. In fact there is nothing in connection with building that cannot now be had ready-made and standardized, if utility alone is considered.

The great cry of the high cost of building is heard everywhere. And the cry is justified, for unfortunately the cost of building is too high. But standard-

(Concluded on page 86)

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The second defect of this kiln was that the cold air entered the kiln at the bottom, the coldest part of the kiln, and it took so long for the air to heat so as to rise, that it caused too sluggish circulation of the air. Our cross vertical system of ventilation corrects this defect.

The third defect in this type of kiln, as well as many others, is that all the pipes are below the lumber, and there is no **direct** heat to warm the outside walls, and to heat the sides or ends of the lumber piles in the kiln, often causing uneven drying and on cross piling checked ends. We corrected this by running our heating pipes along the side walls as well as below the lumber, and in 95% of our kilns this style of piping gave the best results EVER OBTAINED in a dry kiln.

Experience proved, however, that with certain soils, and in some localities the lumber dried faster on top than on the bottom, so after laboratory and practical tests we have now completed our latest advance over the Galoway kiln, and while still keeping AN OPEN space to get below the coils for repairs, and STILL HAVING HEAT ENOUGH ON THE SIDE WALLS to pre-heat the cold air and protect the sides and ends of the lumber piles, we have 90% of our pipes BELOW THE LUMBER.

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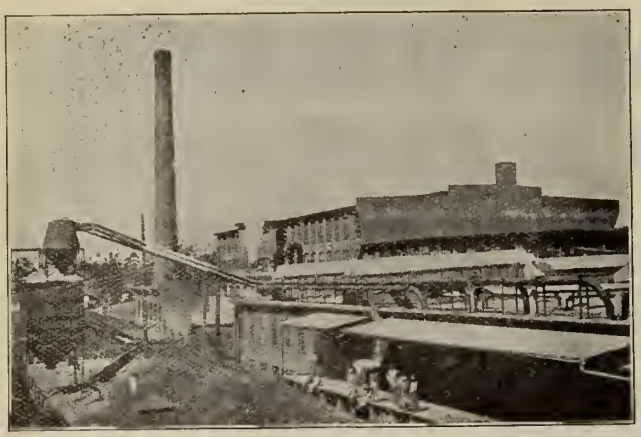

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PUTS AIR TO WORK

How Can Better Millwork be Obtained?

(Continued from page 82)

ized materials are not exempt. I have seen the time, and so have many other millmen, when special made millwork was less costly than strictly stock goods of a similar kind. After all, who is responsible for this clamor for standardization? Is it a combination of advertising and big business for the purpose of eliminating all those who stand in the way of monopoly? It could not have been because of any real desire to lower the price to the consumer; because there was no scarcity of standardized goods at the time the movement was started, and prices were not as high then as now. Anyway, the cost of building is a relative term only. People who build have different objects in view. It may be for utility only and it may be for something entirely different. But if we build for something above and beyond utility, it is unfair to base values on utility alone. Comfort, satisfaction, pride of possession and love of the beautiful are as truly elements of value as the use of the thing in question. Were it not so, all automobiles other than the flivver should be condemned. All architecture should be abandoned; for we know that "Architecture concerns itself with those characters of an edifice which are above and beyond its common use."

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Having completed moving from its former location on West Front Street, Cincinnati, Ohio, (where it occupied virtually all of five city blocks) to its new location in Oakley, a suburb of Cincinnati, the J. A. Fay & Egan Co., manufacturers of woodworking machinery, are now fully established in their new plant. This new plant, which represents an investment of over $1,000,000 is considered to be one of the most modern factory buildings in that part of the United States, and will greatly facilitate the operations of the company. The new building with a floor space of 200,000 square feet is of modern construction,

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The change in location will bring the export sales department into closer correlation with the executive, mechanical and engineering staffs and as a result it will be in a position to serve users of woodworking machines in foreign countries more efficiently and expeditiously than heretofore.

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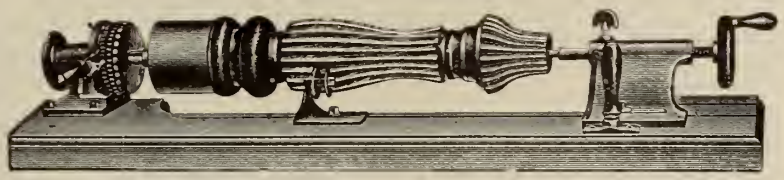

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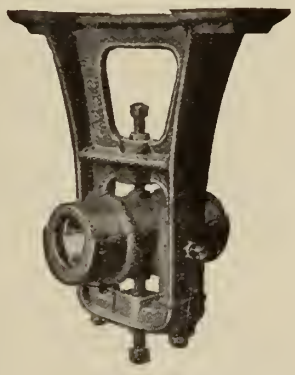

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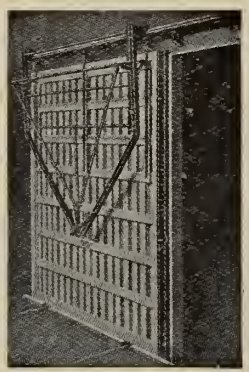

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INDIANAPOLIS, IND.

News of the Trade

Boxboard Products, Limited, London, Ont., is a new firm recently organized to take over the Security Egg Case Filler Company of Canada and to manufacture and deal in all kinds of boxes and cartons. Capital $150,000. W. R. Nickle and R. D. White, both of London, are two of the incorporators.

Canadian Wood Products, Limited, Sherbrooke, P.Q., is a new company recently organized to manufacture and deal in lumber, veneers, and all kinds of wood products. Capital $95,000. Two of the incorporators are Ernest Sylvester and Ormond C. Crepeau, both of Sherbrooke.

Mr. J. E. Angus, president of the Angus-Keefer Lumber Co., Limited, Belleville, Ont., has been appointed manager of the Belleville Sash & Door Co., Limited.

The Angus-Keefer Lumber Co., Limited, Belleville, Ont., have installed a new self-feed rip saw.

A prominent Waterloo, Ont., furniture manufacture, E. O. Weber, president of the E. O. Weber Furniture Co. Ltd., has been in the limelight within the last few weeks. Mr. Weber was a candidate in the riding of North Waterloo for the provincial legislature, running as an Independent. He is a native of the county, having been born on a farm about ten miles west of Kitchener. He entered the furniture business about ten years ago and has been more than ordinarily successful. Success however has crowned his efforts in other fields also, for he has given good service to the community in educational affairs and has been identified with humanitarian projects. He has been a member of the collegiate board for some years, the last two of which he has been chairman. In the recent campaign Mr. Weber had the misfortune to take ill having been confined to his home for nearly two weeks. His many friends in the trade will be pleased to learn that he has recovered and has resumed his numerous posts of activity.

The continued growth and development of the furniture and allied industries in Kitchener is reflected in the construction of a new factory by J. Walter and Sons Ltd., manufacturers of fibre-wood carvings. This plant, which is the only one of its kind in Canada, was founded about a decade ago by the late J. Walter who acquired his skill and knowledge in the old country where he was born and educated. Within a few years the industry, which is being continued by a company under the direction of one of his sons, J. Walter, Jr., has grown rapidly. The company does a considerable export trade and besides supplying furniture factories with their products also caters to ship-building concerns. A modern two-storey factory of reinforced concrete construction, 60 feet by 134 feet, is being erected on East King street, and will be in operation by October 1, it is expected.

H. P. Warren, cabinetmaker and upholsterer, has moved from 503 Dovercourt Road, Toronto, to 598 Yonge Street. Mr. Warren has had many years of experience in some of the largest manufacturing furniture concerns in Great Britain; also has been engaged for many years in the furniture building in Ontario. A strong feature of his business is his repair and remodelling department.

The K. D. Manufacturing Co., Kingston, Ont., have just commenced to manufacture high grade imitation Circassian walnut mouldings, in addition to their full line of over frames.

Dominion Woodwork, Limited, Victoriaville, P.Q., was recently incorporated as successors to Levasseur & Fortier, Limited. The company are the largest manufacturers of garment hangers in Canada and will also make shoe trees, mitten forms for knitting mills, hardwood flooring, toys and other wood products. Capital $175,000.

Paul Bros., Montreal, furniture manufacturers, is a recent registration.

The Canadian Link-Belt Co., Limited, have changed their name to Link-Belt, Limited.

D. Kemp Edwards, Limited, located temporarily on Mariposa Ave., Rockcliffe, Ottawa, is a new firm recently formed with a capital of $150,000 to manufacture and deal in all kinds of woodenware products. David Kemp Edwards is the principal incorporator.

Tunks Bros., Limited, Bothwell, Ont., were recently incorporated to manufacture and deal in baskets and boxes and other wooden products. Capital $25,000.

Chas. Moore, president of the Stratford Mfg. Co., Stratford, Ont., makers of all kinds of furniture and wooden articles report that they are exceptionally busy at present. The one storey addition which was completed this spring is a cabinet and finishing department. A new high speed sticker supplied by the Preston Woodworking Machinery Co. was installed recently.

The Oakville Basket Factory Co., Oakville, Ont., have awarded a contract for the erection of a new factory on Dundas St. The building will be two storeys, 140 x 70 feet of concrete and steel construction.

The Welsh Lumber Company, 2219 Yonge St., Toronto, have started work on their new one storey mill. It will be of brick construction, 50 x 40 feet, and will cost about $4,000.

Dwain Martin, pioneer piano manufacturer of Ottawa, passed away in that city recently in his 72nd year. He was president of Martin-Orme, Limited, and Orme, Limited, both Ottawa firms.

The Yorkville Wagon Works, was recently registered at Toronto.

Piano Cases & Phonographs, Limited Brantford, manufacturers of phonograph cabinets and piano cases have assigned.

Gourley, Winter & Leeming, Limited, Toronto, manufacturers of all kinds of musical instruments, are in the hands of the receiver.

Peerless Auto Body & Fender Co., Hamilton, Ont., have assigned.

Cushing Bros., Regina, Sask., have secured the millwork contract for the new Collegiate Institute in that city. The new building will cost about $100,000.

The Conboy Carriage Co., Queen St. at the Don, Toronto, have been authorized by supplementary letters patent to decrease their capital from $100,000 to the sum of $25,000. The decrease will be effected by the cancellation of one hundred unissued shares of the capital stock and by the cancellation pro rato of six hundred and fifty issued and outstanding shares of the capital stock of the company.

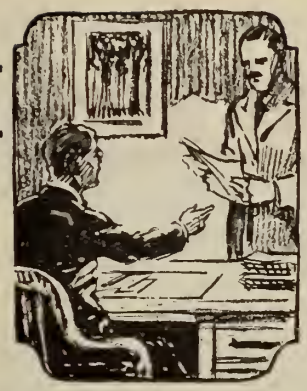
Fire caused by a lightning volt striking a warehouse of the Canadian Industrial Alcohol Co. at Corbyville, Ont., destroyed the building causing an estimated loss of $2,000,000.

A small sash and door shop will be erected shortly by H. S. Sheid, 379 McRoberts Ave., Toronto. The site of the new building is on the south side of Eglington Ave. near Blackthorne Ave. and will be two storeys, 25 x 50 feet of frame and brick veneer construction. It will cost about $3,500.

A. W. Allen & Son, Middleton, N.S., manufacturers of all kinds of wood products, are contemplating erecting a new factory. The new unit will be of concrete block construction and the dimensions are 40 x 90 feet.

Brandram Henderson, Limited, Montreal, manufacturers paints, varnishes, polishes and other similar ingredients, are contemplating the erection of a $200,000 factory building. A bond issue for this project has been sold to Securities Corp. Ltd., Montreal.

Gum



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1 Glue Press 12-0 x 4-0, in 7 sections,
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1 Cowan Sand Drum; 2 Drums and Disc,

Also a number of other machines, pulleys, shafting, etc. In fact, all our factory equipment, as our factory is being dismantled.

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Matcher, and Sizer, 30" x 12" American.
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Moulder, Woods No. 2 light inside.
Moulder, Smith 10" four side.
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FOR RENT: a desirable flat, suitable for woodworking or manufacturing plant. Good light and some machinery. Apply C. R. Williams Co. Ltd., 11 St. Albans St., Toronto. 7

Pigment, Paint and Varnish Trade Flourishing

The healthy condition of the U.S. pigment, paint and varnish industries is shown in the export report for the first quarter of 1923 by an improvement of 41 per cent. in the first quarter of 1923 over the first three months of 1922, shipments having risen from an aggregate value of $2,613,536 to $3,690,980. Expansions were evident in all of the items included under this class, except in white sublimed lead, varnishes other than oil and bone black. The value of the last named, however, fell short of the 1922 figures by but $26. Foreign sales of mineral earth pigments, ochers, umbers, siennas, metallic whiting,etc., in January-March, 1923, totaled $244,828 (6,705,618 pounds), surpassing those of January-March, 1922, by $58,228 (1,238,85. pounds). The total tonnage of zinc oxide sent abroad more than doubled, from 1,664,224 pounds in the first quarter of 1922, to 3,481,465 pounds in the similar period of 1923. During the first three months of the current year, exports of lithopone were 1,035,241 pounds ($56,149); bone black, 546,204 pounds ($32,856); carbon and lamp-black, 4,684,391 pounds ($709,640), and red lead and litharge 1,226,819 pounds ($120,405). Shipments to foreign countries of enamel paints and others ready mixed, likewise more than doubled, from 213,584 pounds ($66,891) of enamel in the first 1922 quarter to 500,060 pounds ($135,926) in January-March, 1923; and from 252,270 gallons ($524,526) of other ready-mixed paints in the 1922 period to 2,235,338 gallons ($1,024,089) in 1923. Oil varnishes also showed an increase, comparing the corresponding three months of 1922 and 1923, going from 59,717 gallons, valued at $123,674, in the earlier period to 112,068 gallons, valued at $204,616 in 1923. Exports of linseed oil also gained. Figures for the two quarters recorded a rise of 47 per cent in value, from $69,989 (628,895 pounds) to $103,104 (807,245 pounds).

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"Well Bought is Half Sold"

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any size required

2 cars 5/8 x 3".

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Largely 3 & 4")

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You will find one of these styles especially designed for your work.

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No. 2 is the No. 1 machine built with one stationary and one movable saw, which is adjustable while running to the full width of the collar space 8½".

No. 3 is especially designed for short gang ripping and will rip as short as 6½".

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No. 5 same as No. 2 and has movable saw, which travels the full width of the 14" collar space.

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The reliability and efficiency of Hoosier Rip Saws are known to woodworkers everywhere. They are made in the best possible manner.

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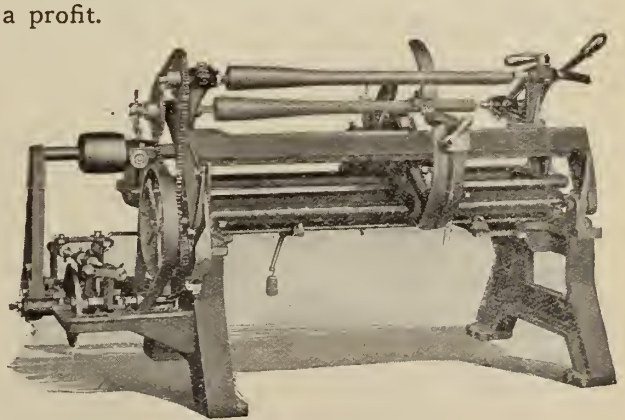
MAKE MORE MONEY

from your timber by working it into handles and other turned work. Short and crooked logs, small trees, and other waste material can be worked at a profit.



OBER machines will help you.
We build Turning Lathes, Sanders, Rip Saws, Bolters, Boring and Chucking machines, etc.

SIMPLE, STRONG, DURABLE

Write for free catalogue No. 31.

The Ober Mfg. Co.

Chagrin Falls, O., U.S.A.

Canadian Woodworker" Buyers' Directory—Continued

FIRE INSURANCE
Canadian Appraisal Co. Ltd., Montreal, Que.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N. Y.
Herman Behr & Co., Inc., Brooklyn, N.Y.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).
Canada Glue Co., Brantford, Ont.

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GLUE
Canada Glue Co., Brantford, Ont.
Casein Manufacturing Co., New York City
Dunn Co., of Canada, Thomas W. Montreal
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.
Sanderson Pearcy & Co., Toronto, Ont.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

GLUE CLAMP CARRIERS
Nels J. Billstrom, Rockford, Ill.

GLUE HEATERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE JOINTERS
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUED STOCK
Nichols Company, A. S. New York, N.Y.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Simonds Canada Saw Co., Montreal, P.Q.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GROOVERS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Mattison Machine Works, Rochford, Ill.

GUM LUMBER
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Hyde Lumber Company, South Bend, Ind.
Merceau-Hawkins Tie Co., Huntington, W. Va.
Sondheimer Co., E., Sondheimer, La.
South Texas Lumber Co., Houston, Texas

HAND SCREWS
Fay & Egan Co., J. A. Cincinnati. Ohio.
Superior Hand Saw and Clamp Co., Grand Rapids, Mich.

HANGARS
Bond Engineering Works, Toronto, Ont.
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

HANDLE & SPOKE MACHINERY
Fay & Egan Co., J. A. Cincinnati. Ohio.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Nash, J. M., Milwaukee, Wis.

HARDWARE
National Hardware Co., Orillia, Ont.
Larsen & Shaw Ltd., Walkerton, Ont.

HARDWOOD LUMBER
American Plywood Corporation, New London, Wis.
Anderson, Shreiner & Mawson, Toronto, Ont.
Atlantic Lumber Company, Toronto, Ont.
Bedna Young Lumber Co., Jackson, Tenn.
Banning, Leland G., Cincinnati, Ohio.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Canadian General Lumber Co., Toronto, Ont.
Des Moines Sawmill Co., Des Moines, Iowa
Hall Bros. Ltd., Toronto, Ont.
Hyde Lumber Co., Memphis, Tenn.
Heeney, Percy E. Kitchener, Ont.
Kneeland-Bigelow Co., Bay City, Mich.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Louisville Point Lumber Co., Louisville, Ky.
Long-Bell Lumber Co., Kansas City, Mo.
Luehrman Hardwood Lbr. Co., St. Louis, Mo.
Mercereau-Hawkins Tie Co., Huntington, W. Va
Mississippi Hardwood Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Oliver Lumber Co., Toronto, Ont.
Otis Mfg. Co., New Orleans, La.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Pickrel Walnut Co., St. Louis, Mo.
Ritter Lumber Co., W. M. Columbus, Ohio.
Sondheimer Co., E., Sondheimer, La.
Stack Lumber Co., Escanaba, Mich.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Stimson & Co., J. V., Owensboro, Ky.
Sullivan, Frank T. Buffalo, N. Y.
Terry-Nicholson-Cates Ltd., Toronto, Ont.
Thurn-Maxsom Lumber Co., South Bend, Ind.
Wood Mosaic Co., Louisville, Ky.
Willey Co., C. L. Chicago, Ill.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HARDWOOD LUMBER (Kiln Dried)
Rathbone, Geo. Ltd., Toronto, Ont.

HARDWOOD FLOORING
Eaton & Sons J. R. Orillia, Ont.

HEATING SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

JOINTERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smith Machinery Co., Saginaw, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Hay Knife Co., Peter, Galt, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shimer Cutter Head Co., of Can. Ltd., Galt.
Simonds Canada Saw Co., Montreal, P.Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNOBS
Waddell Mfg Co., Grand Rapids, Mich.

LACQUERS
Cosmos Chemical Co., Port Hope, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sanducky, Ohio.
Mattison Machine Works, Rochford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

LEGS
Klise Manufacturing Co., Grand Rapids, Mich.

LUMBER DRY KILNS
Sturtevant, B. F. & Co., Galt, Ont.
Nichols Company, A. S. New York, N.Y.

MAHOGANY
Otis Mfg. Co., New Orleans, La.

MACHINE KNIVES
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

METHYLATED SPIRITS
Canadian Industrial Alcohol Co., Montreal

MAGNOLIA
South Texas Lumber Co., Houston, Texas

MILL PIPING
Toronto Blower Co., Toronto, Ont.

MITRE SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS
Sturtevant, B. F. & Co., Galt, Ont.

MOTORS
Lancashire Dynamo & Motor Co., Toronto,
Northern Electric Co., Montreal, Que.
Sturtevant, B. F. & Co., Galt, Ont.

MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati. Ohio.
Nash, J. M., Milwaukee, Wis.

NAILING MACHINES
Yates Machine Co., P. B., Hamilton, Ont.

OAK FLOORING
Rathbone, Geo. Ltd., Toronto, Ont.

PAINT
Marietta Paint & Color Co., Marietta, Ohio.
Sanderson Pearcy & Co., Toronto, Ont.

PAINT DRYERS
Sanderson Pearcy & Co., Toronto, Ont.
Nichols Company, A. S. New York, N.Y.
American Plywood Corporation, New London, Wis.

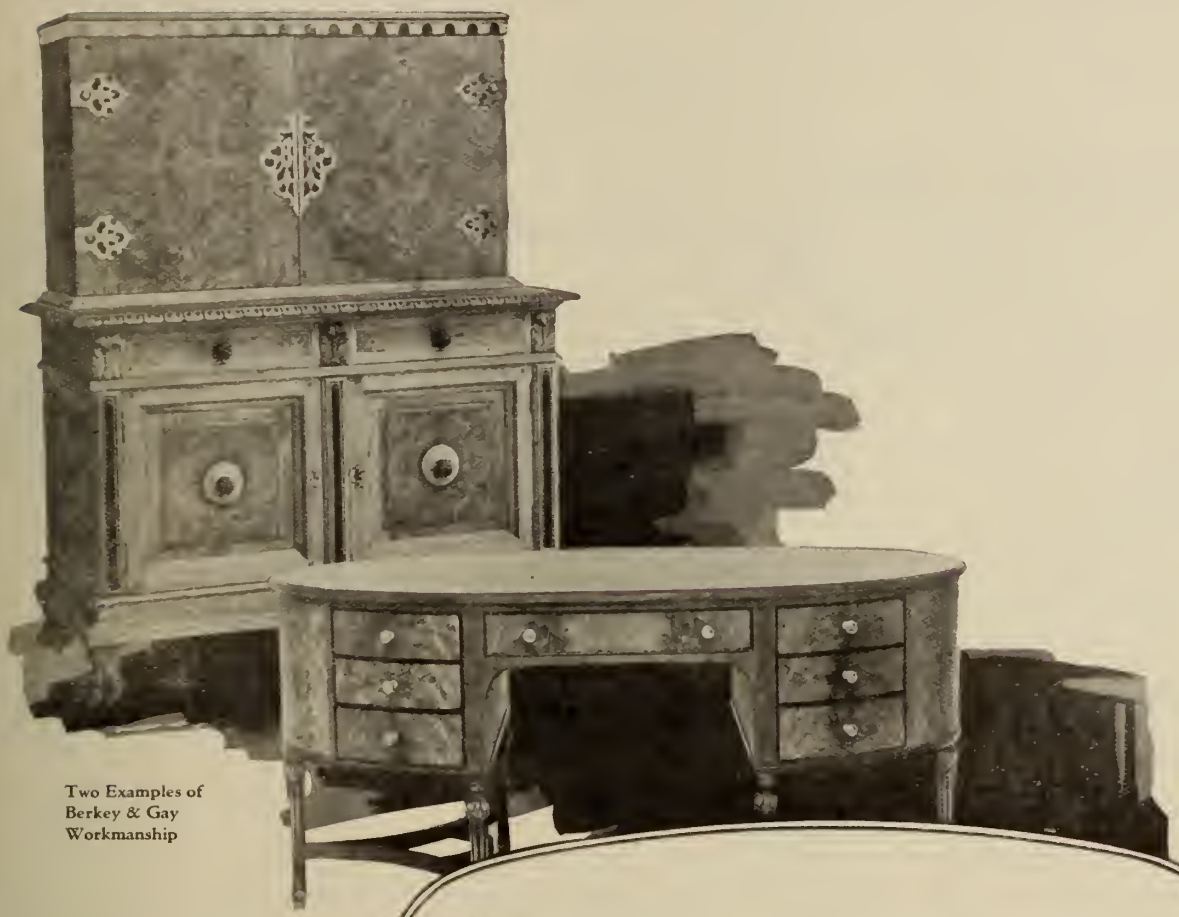
PAINT SPRAYING EQUIPMENT
DeVilbiss Mfg. Co., Toledo, Ohio

PANELS
Calhoun Plywood Co., Sheboyan, Wis.
Hay & Co., Woodstock, Ont.
Pannill Door Co. Ltd., Toronto, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Rathbone, Geo. Ltd, Toronto, Ont.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PATTERNS PINE
Rathbone, Geo. Ltd., Toronto, Ont.

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.



Two Examples of Berkey & Gay Workmanship

Master Finishers at the Berkey & Gay Plant Use Carborundum Brand Garnet Paper and Cloth

THE name Berkey & Gay is always associated with the distinctively beautiful because in design, quality and workmanship Berkey & Gay furniture is the product of the artistry of master craftsmen.

In the creation of such furniture finish is an all-important factor. That is why many of the skilled sanders in this plant use Carborundum Brand Garnet Paper and Cloth—clean cutting, uniformly coated, flexible products that can be depended on to uphold the standards of good workmanship.

Carborundum Brand Garnet Products make good sanders better sanders.

The Carborundum Company

Niagara Falls, N. Y. U.S.A.

New York, Boston, Chicago, Cleveland, Detroit, Cincinnati, Philadelphia, Pittsburgh, Milwaukee, Grand Rapids

"Canadian Woodworker" Buyers' Directory—Continued

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
General Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Toronto Blower Co., Toronto, Ont.
Williams Machinery Co., A. R. Toronto, Ont. Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corporation, New London, Wis.
Calhoun Plywood Co., Sheboygan, Wis.
Guelph Patent Cask Co., Scotstown, P. Q.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

POWER APPARATUS
Northern Electric Co., Montreal, Que.

POWER & LIGHT PLANTS
Fischman Spring Co., Kitchener, Ont.

POWER TRANSMISSION MACHINERY
Bond Engineering Works, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Bond Engineering Works, Toronto, Ont.

PULLEYS
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PUMPS—Condensation and Return
Canadian Blower & Forge Co., Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

RATTANS
Carter, E. T., Toronto, Ont.

REEDS
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RETORTS
Perfection Wood Steaming Retort Co.,

REVERSIBLE PLANING MILL FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FOLLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochranc & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SANDPAPER
Behr & Co., Herman, Brooklyn, N. Y.
Canada Glue Co., Brantford, Ont.
Carborundum Co., Niagara Falls, N.Y.
Sanderson Pearcy & Co., Toronto, Ont.

SASH DIMENSION
Pannill Door Co., Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW SHARPENERS
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
General Machinery Co., Toronto, Ont.
Cowan & Company, Galt, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

SHAFTING
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.
Bond Engineering Works, Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

SHELLAC
International Varnish Co., Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

SOFTWOODS
Big Bear Lumber Co., Toronto, Ont.
Canadian General Lumber Co., Toronto, Ont.
Rathbone, Geo., Limited, Toronto, Ont.
Hall Bros. Ltd., Toronto, Ont.
Heeney, Percy E. Kitchener, Ont.
Luehrman Hardwood Lumber Co. Chas. F., St. Louis, Mo.
Terry-Nicholson-Cates Ltd., Toronto, Ont.

SPRINGS
Ideal Fence & Spring Co., Windsor Ont.

SPRING MATTRESSES
Fischman Spring Co., Kitchener, Ont.

SPRING CONSTRUCTION
Fischman Spring Co., Kitchener, Ont.

SPRUCE DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM & OIL SEPARATORS AND REFINERS
Smart-Turner Machine Co., Hamilton, Ont.

STEEL BALLS
Canadian SKF Co., Toronto, Ont.

STEEL PLATE PLANING MILL EXHAUST
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

STEEL PRESSURE BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE RIMS
Bruce Woodworkers Limited, Chesley, Ont.

TABLE SLIDES
Bruce Woodworkers Limited, Chesley, Ont.
Watertown Table Slide Co., Watertown, Wis.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Pettingell Machine Co., Amesbury, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Calhoun Plywood Co., Sheboygan, Wis.
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
National Dry Kiln Co., Indianapolis, Ind.

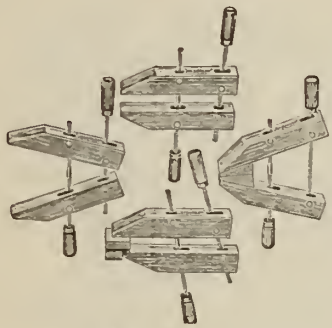
TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

The manufacturer who makes the article is helpless without the merchant who makes the market

Reach your market through "Canadian Woodworker"

The "JORGENSEN" Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws



The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."

"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

Manufactured only by the

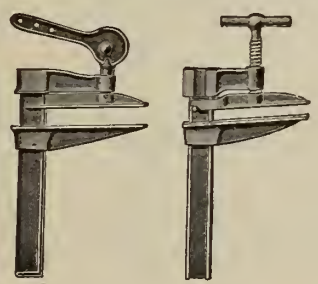
Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

For Sale By

Aikenhead Hardware Limited .....Toronto
Lewis Bros., Limited .....Montreal

Colt's Clamps for the Woodworker



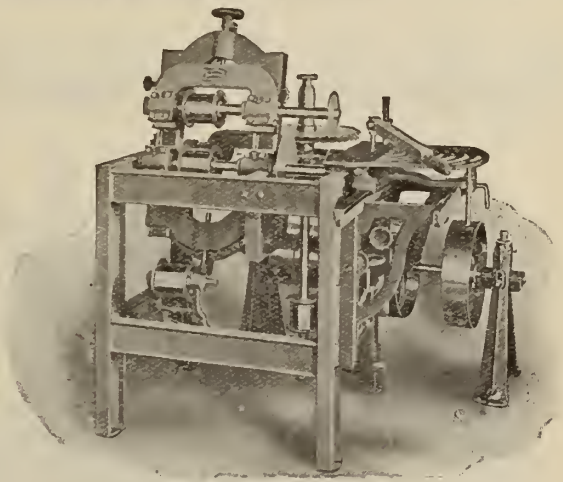
Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.



No. 19 Saw Tenoner
No. 20 Large Saw Tenoner

Fitted with five saws, has replaced cutter head machines; for all jointing and halving in wood shops and for automobile and carriage wood-work it is the best machine on the market.

Much door, window, sash, furniture and cabinet work is done with this machine where a nice, smooth tenon is required. It is also used for the halving and jointing of stock at any angle.

Tenoners equipped with flexible coupling for direct motor drive or for countershaft.

No. 19 Small Saw Tenoner.
No. 20 Large Saw Tenoner.
No. 21 Regular Bevel Saw.
No. 22 Large Bevel Saw.
No. 23 8½ Irregular Dresser.
No. 24 6" Irregular Dresser.

We also manufacture metal working machines.

Write for catalogue

Pettingell Machine Co.

Amesbury, Mass.

Mention Canadian Woodworker

"Canadian Woodworker" Buyers' Directory—Continued

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

TURNED WOOD GOODS
Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TURPENTINE
Brown Corporation, Quebec, P.Q.
Carter, E. T., Toronto, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

TWIST WORK
Klise Manufacturing Co., Grand Rapids, Mich.

TWISTING AND FLUTING MACHINES
Shawver Co., Springfield, Ohio

UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

VACUUM PUMPS
Canadian Blower & Forge Co., Kitchener, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

VARNISH
International Varnish Co., Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio
Sanderson Percy & Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Acme Veneer & Lumber Co., Cincinnati, O.
American Plywood Corporation New London, Wis.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Nickey Bros., Memphis, Tenn.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Pickrel Veneer Co., New Albany, Ind.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER DRYERS
Nichols Company, A. S. New York, N.Y.

VENEER SAWS
Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin, William R. Ltd.
Preston Woodworking Machinery Company, Preston, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Sawmill Co., Des Moines, Iowa.
Hartzell, Geo. W., Piqua, O.
Maus Lumber Co., Chas. O. South Bend, Ind.
Pickrel Walnut Company, St. Louis.
Sullivan, Frank T., Buffalo, N. Y.

WASTE
Carter, E. T., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Pettingell Machine Co., Amesbury, Mass.

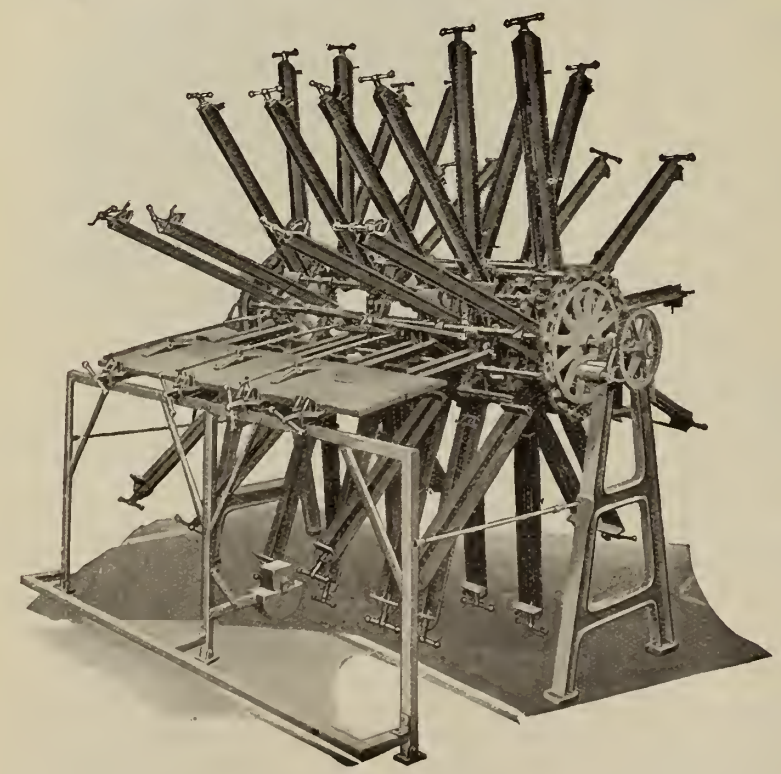
WOOD STEAM RETORTS
Perfection Wood Steaming Retort Co., Parkersburg, W. Va
Shawver Co., Springfield, Ohio

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.

Speed + Perfect Joints = Low Costs



REG. U.S. PAT. OFF.
The Taylor TRADE MARK

CLAMP CARRIER
for
Small Jobs in the Big Plant
All Jobs in the Little Plant

1. Natural standing position of operator.
2. No Juggling of heavy clamps.
3. No bending or walking.
4. No pile to overturn to get work glued first—simply move clamp one section.
5. Less space than equal number of clamps with work in, piled on the floor.

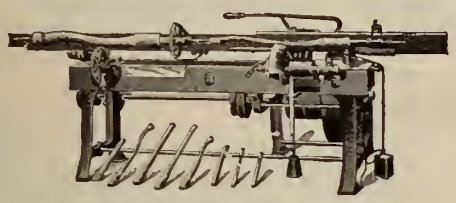
Any size to suit your work. 8 and 12-section wheel type. 16, 20, 30 and 40-section chain type. 4, 5 or 6 clamps per section for stock up to 42-in. wide.

Representatives:
A. R. Williams Machinery Co., Toronto. Canada

James L. Taylor Mfg. Company
Poughkeepsie, N.Y., U.S.A.

Klotz Machine Co's
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

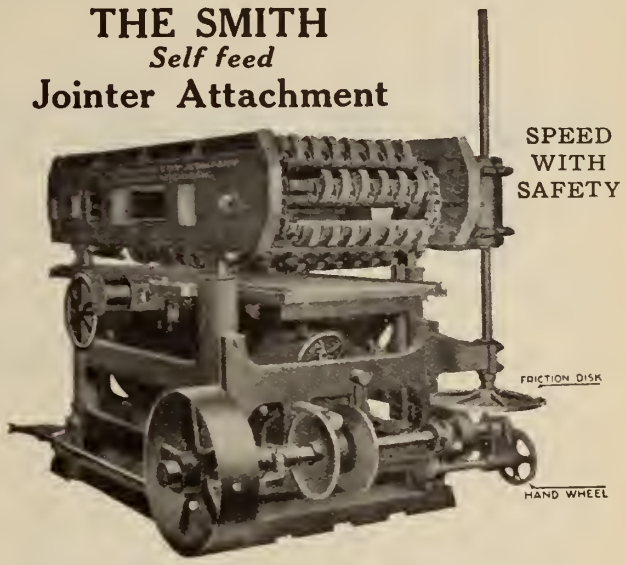
We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

MANUFACTURED BY

Klotz Machine Co.,
Sandusky, O., U. S. A.

Write for descriptive circulars and prices.

THE SMITH
Self feed
Jointer Attachment



Here is a self feed jointer attachment that is saving its users an average of $1200.00 per year.

We will make this attachment to fit any standard jointer or will furnish jointer and attachment complete.

SMITH MACHINERY CO.
SAGINAW - MICH.

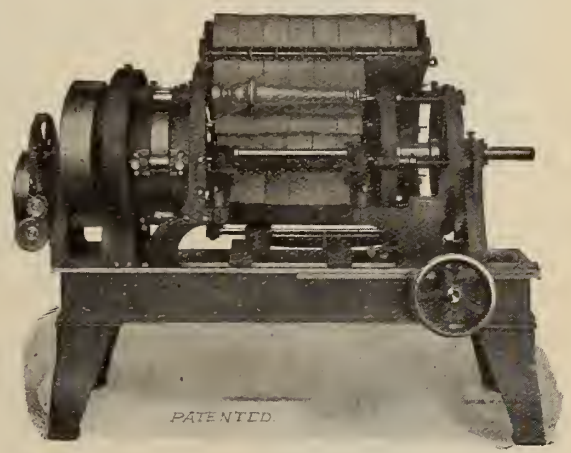
McKNIGHT'S No. 131 E
Motor Driven Chuck Stand

Samples at right show a few of the many varieties of work made with our chucks.

Let us know your needs.
Cuts and Prices on Request.

L. G. McKnight & Son Co.
Makers of Patented
Chair Making—Chair Bending, Wood Working Machinery
GARDNER, MASS., U.S.A.

How Many More



orders could you fill if you had a Nash Automatic Sander for your chair and furniture turnings?

Let me give you details as to capacity, etc., of the Sander and you can then figure the saving for yourself.

J. M. NASH, Milwaukee, Wis.

DOOR PANELS

Sanded 2 sides

800	pcs.	3/8 x 25 x 68	Fir G 2 S.
600	"	do 62	" "
250	"	3/8 x 24 x 60	" "
250	"	do 72	" "
250	"	3/8 x 30 x 60	" "
250	"	do 72	" "
500	"	1/4 x 30 x 72	" "
150	"	3/8 x 25 x 62	Bass. G 2 S.
135	"	do 68	" "
124	"	3/8 x 25 x 62	Birch G 2 S.
175	"	do 68	" "
160	"	3/8 x 25 x 68	1/4 Cut W. Oak.
60	"	do 62	" "
24	"	3/8 x 24 x 72	" "
8	"	3/8 x 30 x 72	" "
74	"	3/8 x 25 x 62	Plain Oak.
140	"	do 68	" "
46	"	3/8 x 30 x 60	" "
10	"	3/8 x 24 x 60	" "
30	"	3/8 x 24 x 60	Chestnut.
7	"	3/8 x 30 x 60	"
100	"	3/8 x 25 x 68	"
147	"	3/8 x 25 x 62	"
165	"	3/8 x 25 x 68	Selected Red Gum.
75	"	3/8 x 25 x 62	"
17	"	1/8 x 24 x 60	3 Ply Cottonwood.
34	"	1/8 x 32 x 60	" "
28	"	1/8 x 24 x 66	" "
10	"	1/8 x 42 x 66	" "
47	"	3/16 x 24 x 66	" "
30	"	3/16 x 32 x 66	" "
44	"	3/16 x 42 x 60	" "
46	"	1/4 x 42 x 60	" "
3200	Clear Fir Doors 1 3/8.		

Any size from 2 - 0 x 6 - 6 to 2 - 8 x 6 - 8.

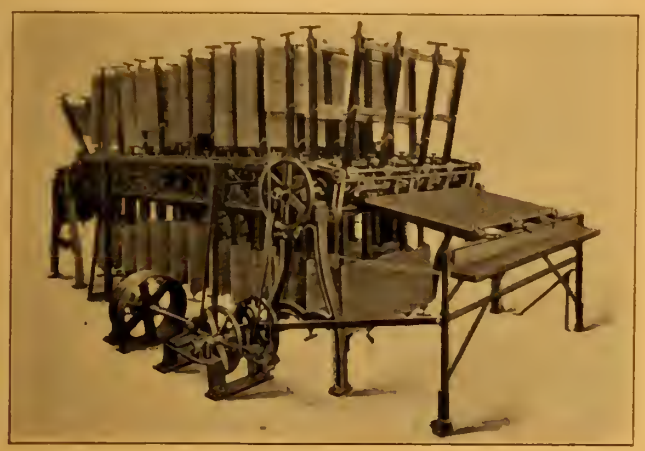
ONE — TWO — THREE PANEL

George Rathbone

Northcote Ave., Toronto

One Man Does the Work of Two

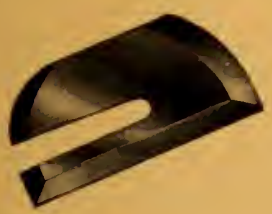
with a Billstrom Glue Clamp Carrier



For every plant where much edge-gluing is done there is a real need for a Billstrom.
Here's why:—

The empty clamp is held at just the right height for the greatest convenience of the workman.
When the clamp is filled he pulls a cord, which carries the filled clamp away and deposits an empty one in its place.
One man can accomplish as much by using it as two men can do employing the old methods.
It holds the work off the floor until the glue has set, when the glued stock can be quickly removed and piled flat, thus greatly conserving space.
It reduces the labor and cost of edge gluing to the minimum.
There is a size to suit your particular requirements.

N. J. BILLSTROM
2002 NINTH ST. ROCKFORD, ILL.



ATKINS

STERLING QUALITY

SAWS and KNIVES ECONOMIZE

ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing

Atkins Sterling Quality Saws
and Machine Knives

Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.

Write to-day for our Knife Booklet "C.W." and Pattern Template Poper.

E.C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

Mattison 207 Chain Feed Straight-Line Ripper

The Ripper for Increased Output

SEVERAL months ago French & Heald Co., Milford, New Hampshire, installed a Mattison Rip Saw with built-in motor, for ripping 2-inch hardwood. They pay tribute to this unusual machine in these words:

"In our long experience in woodworking, we have never used a tool which produces such perfect work in such quantities and with such good results all around as that produced by this saw. The design and makeup of the machine are first class in every way and every attachment connected with it is perfection itself.

"The machine is practically noiseless and it wastes very little lumber, as it rips perfectly straight in all instances.

"We are entirely satisfied with the tool and recommend it highly."

Our bulletin on the No. 207 brings out in full the earning power of the machine and the mechanical excellencies that give it sweeping superiority over all machines in its field.

MATTISON MACHINE WORKS

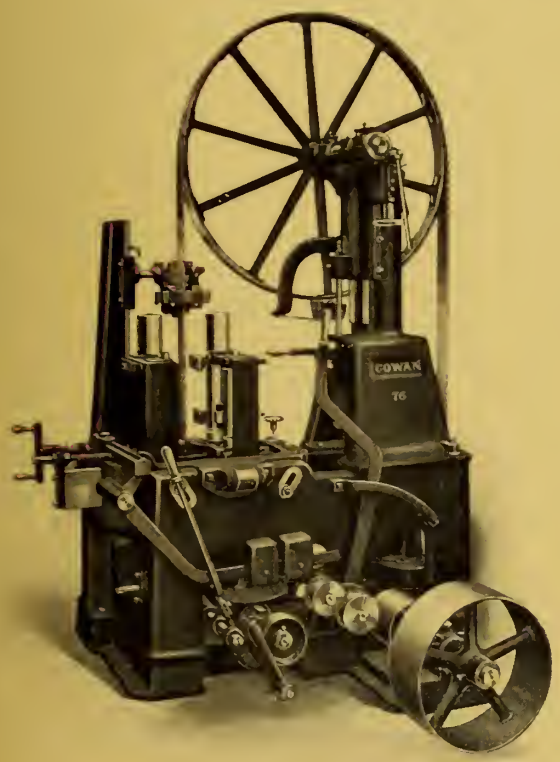
ROCKFORD, ILLINOIS

Volume-Twenty Three TORONTO, AUGUST, 1923 Number Eight

CANADIAN WOODWORKER and Furniture Manufacturer

COWAN BAND RESAWS

FOR ECONOMICAL PRODUCTION



Band Resaw 76

48″ Wheels Tilting Rolls
4″ Saw Variable Feed
Capacity 8″ horizontally, 26″ vertically

Other Sizes

42″ Wheels, 3½″ saw, capacity 8″ x 26″
48″ Wheels, 5″ or 6″ saw, capacity 12″ x 30″
54″ Wheels, 5″ or 6″ saw, capacity 6″ x 26″
60″ Wheels, 7″ saw, capacity 20″ x 30″

SIMPLE, DURABLE

MANY EXCLUSIVE FEATURES

BALL OR BABBITT BEARINGS **MOTOR DRIVE IF DESIRED**

We are the oldest manufacturers of Woodworking Machinery in Canada and have always maintained a uniform high standard.

We will welcome visitors to our Exhibit—Machinery Hall, Toronto, Aug. 25 to Sept. 8.

COWAN & COMPANY OF GALT LIMITED

GALT, ONTARIO, CANADA

Alphabetical Index to Advertisers, Page 12

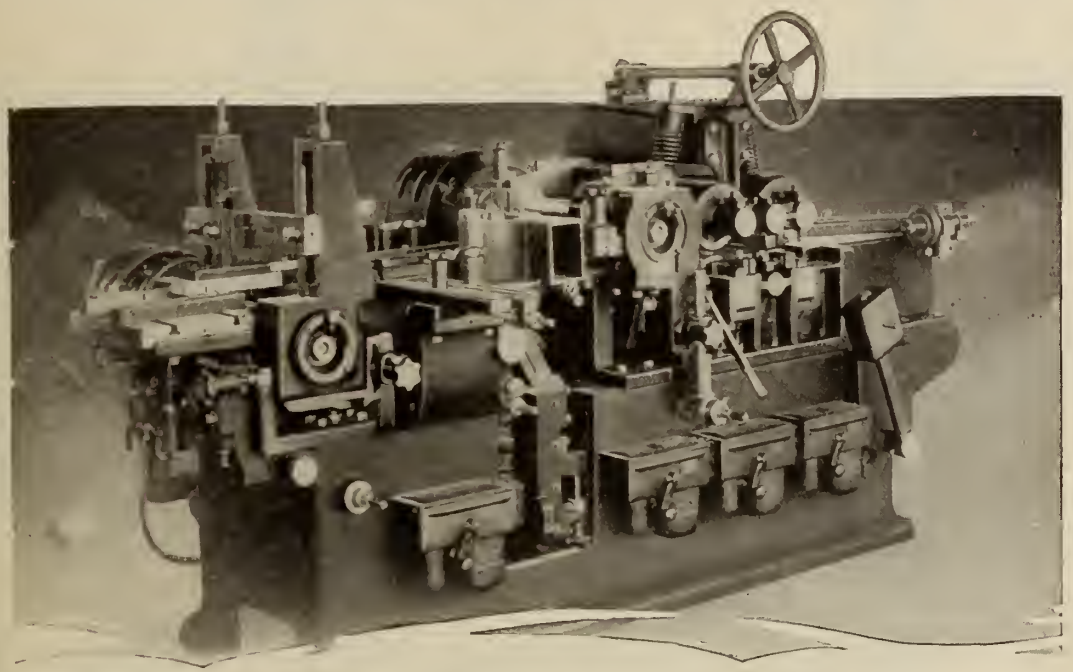
HAS it ever occurred to you that in the manufacture of alcohol for industrial purposes, as in the manufacture of any other product, there is always one organization better equipped than the other to counsel with, to supply the exact grade your product needs, where one quality only prevails—the highest—and where the success you achieve with our product, not the amount of your order—is first and foremost?

Should it not be worth a great deal to counsel and deal with such an organization?

Canadian Industrial Alcohol
Company, Limited
MONTREAL

Manufacturers of
MAPLE LEAF BRAND
Ethyl Alcohol-Cologne Spirits-Absolute Alcohol, B.P.
Methylated Spirits and Denatured Alcohol (all formulae)
Distributing Warehouses
Montreal-Toronto-Winnipeg-Vancouver-

SKF



Ball Bearings Permit Cutter Heads
To Operate At Severe Angles

INDIVIDUAL, built-in motors and ball bearing spindles make possible the great flexibility of this heavy duty moulding machine and contribute much to its efficiency and reliability.

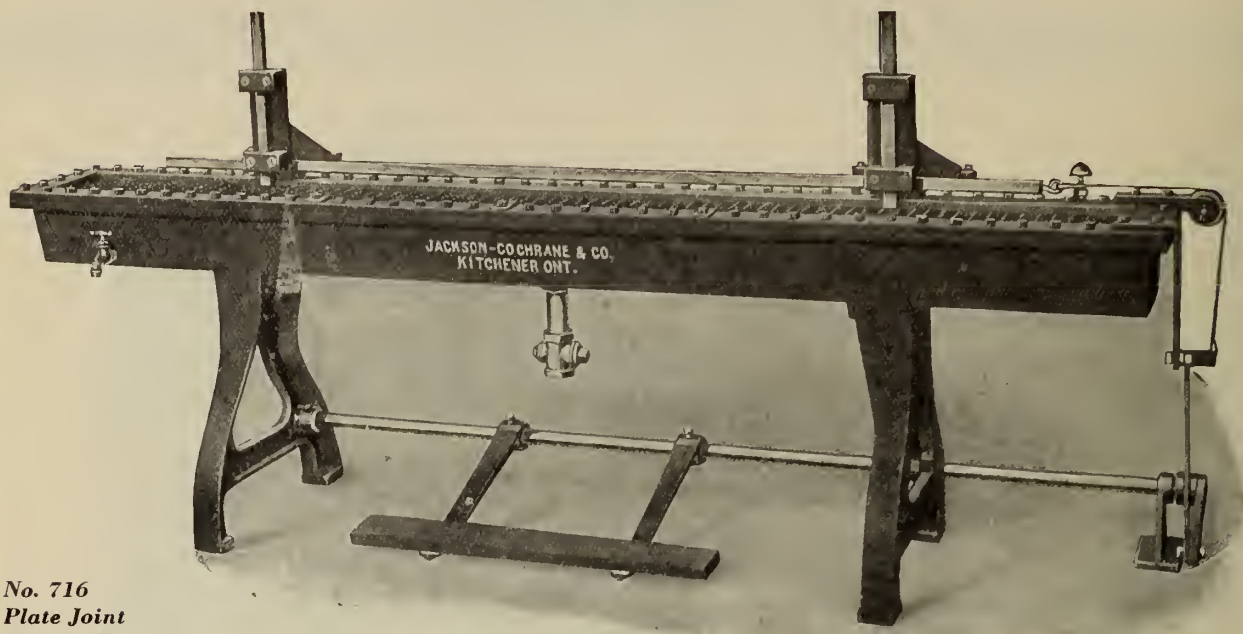
The side heads are adjustable vertically, as well as horizontally, and may be tilted to an angle of 45 degrees. Despite this tilt, the **SKF** marked, self-aligning ball bearings supporting the spindles will not run dry, heat or wear as the housings are effectively sealed against the escape of lubricant. These seals also exclude all foreign matter, insuring a clean bearing.

Furthermore, the exclusive self-aligning feature of this bearing automatically compensates for misalignment without placing any strains upon the bearings. Oil is needed only at infrequent intervals, and even after years of service there is no appreciable wear.

These and other advantages of self-aligning ball bearings have resulted in their wide adoption on woodworking machinery of all kinds.

Normal View *Deflected View*

A NEW PLATE JOINT GLUE SPREADER



No. 716
Plate Joint
Gluing Machine

YOU CAN DOUBLE THE PRODUCTION OF YOUR GLUE CLAMPS WITH THIS NEW MACHINE

A thoroughly tested and tried machine that operates easily without waste or mess. It will more than double the production of your clamping equipment. This was proven when it was recently given a thorough trial in one of the largest furniture factories in the Dominion.

The method of operation is simple. The operator presses the foot lever down, forcing the perforated plate up out of the glue. Then by resting the edges of the stock on the plate and moving them backward or forward about one inch, the edges resting on the plate will be instantly and completely spread with glue. On releasing the foot lever the plate is lowered into the glue ready for the next batch of stock.

The machine is supplied with a self acting cover which raises and lowers automatically with the plate, keeping the glue free from dirt.
The tank is 7″ wide and 4″ deep.
Perforated plate is 5″ wide, and 1″ shorter than tank.

Size	Floor Space	Weight
5′ 11″	7′ x 2′	700
7′ 11″	9′ x 2′	800

Descriptive Circular sent on request.

JACKSON, COCHRANE & CO., KITCHENER, ONT.

A PONY PLANER

——but Powerful

A Simple, Sturdy Machine for General Light Surfacing
Good floor support—No vibration

All Gears cut from the solid and totally enclosed
Three Sizes—16", 20" and 24", by 6" thick.

No. 2 "LIGHTNING"
Single Cylinder Surfacer

J. A. Fay & Egan Company

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

2705-2805 Robertson Ave. (Oakley) Cincinnati, Ohio, U.S.A.

Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.
Branches: Montreal, St. John, N. B., Winnipeg, Vancouver

No. 220 Single Surfacer

C.M.C.

THE No. 220--the last word in Single Surfacers--is made in three sizes--24″ with babbitt bearings for simply planing at moderate speeds, 30″ and 36″ with babbitt or ball bearings for heavy, fast cutting or fine finishing of wide work.

Special attention is drawn to the rigid construction of the frame, the long, narrow gib on which the table rises and falls, the crucible steel cylinder tested for both standing and running balance and fully guarded gears.

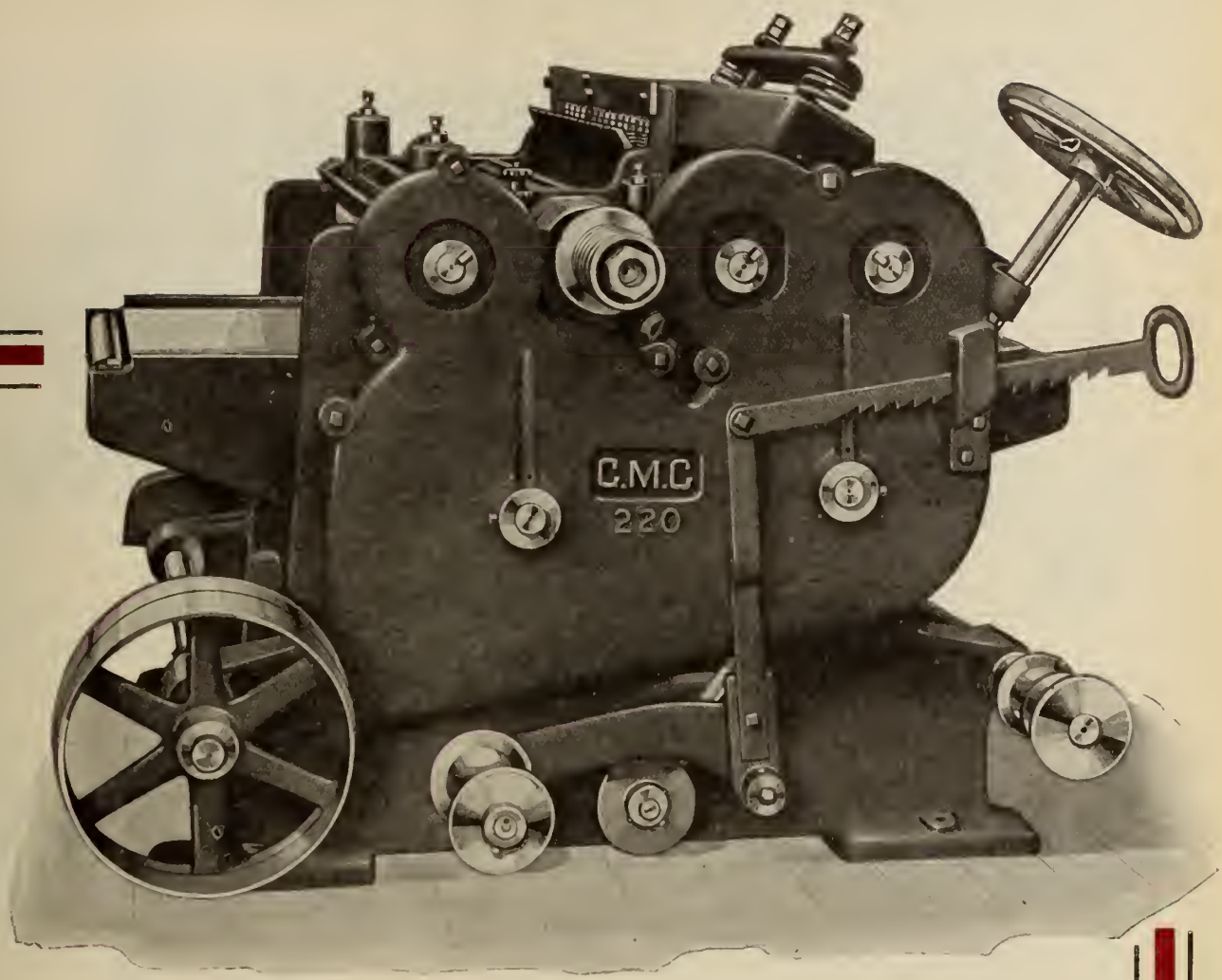
Equipped with plain, divided or sectional rolls, round or square cylinder and electric grinding and jointing attachment when required.

Complete description will be gladly sent upon request.

CANADA MACHINERY

GALT,

Builders of Iron and Woodworking Machine Tools.



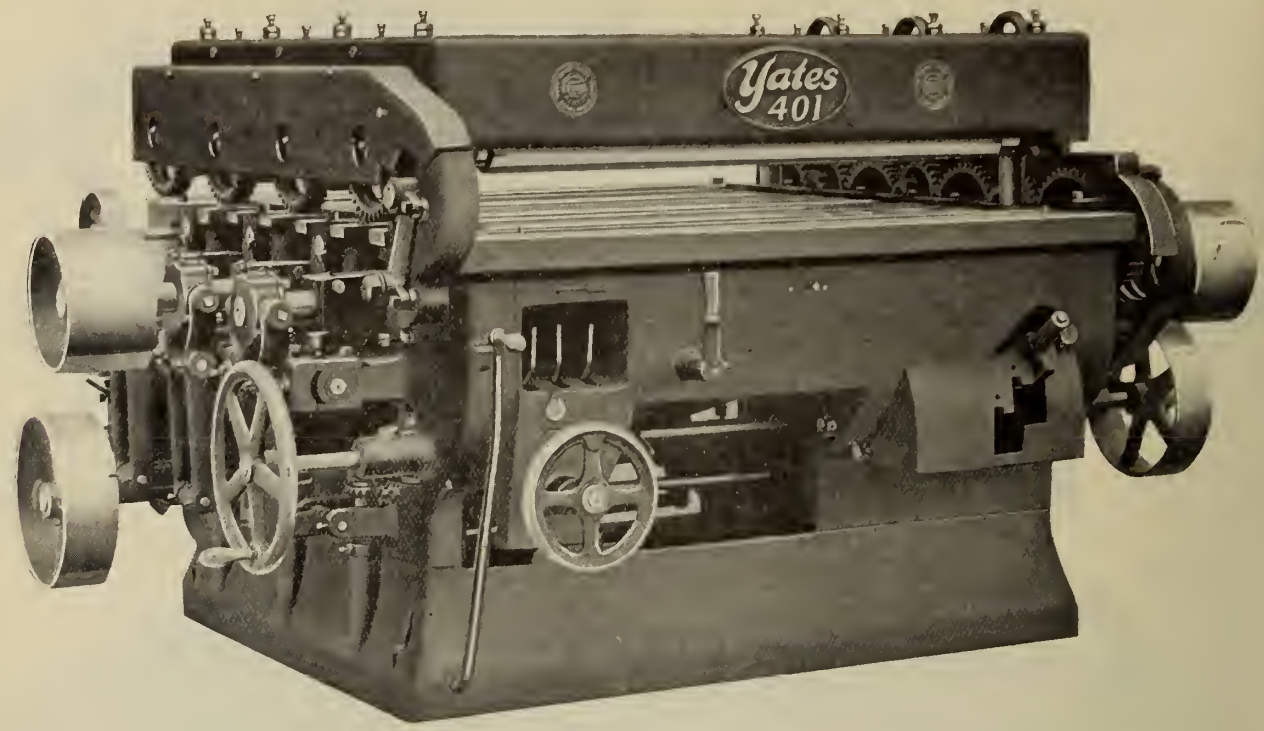
When equipped with jointing attachment, it will dress stock at fast feeds leaving a fine polished surface.

Investigate its merits before making your choice. You will be convinced.

CORPORATION LIMITED

ONTARIO.

Toronto Sales Office — 721 Bank of Hamilton Bldg.



PERFECT EVEN SANDING

Steady production, long service-life and fine finished work—these three things make Yates 401 Sander the preference. This Sander also assures perfect, even sanding under all conditions. Stock run through this machine acquires a finish far superior to that produced by any other sander.

It is a pleasure to operate this Sander. The 401 is extremely simple in operation. Every advisable feature is provided to render it fine and fast performing. Feed rolls may be adjusted independently. Ball bearing oscillators are furnished.

If your establishment requires rapid production and fine finished stock, Yates 401 is a practical investment. Upon request, we will furnish you with complete details of this machine.

P. B. Yates Machine Co. Ltd.
HAMILTON — ONTARIO
WORLD'S LARGEST MANUFACTURERS OF WOODWORKING MACHINERY

Where are values to-day?

The insurance of your property is a matter of grave importance. It can be made on an economical, safe basis —if you have a Canadian Appraisal —or it can be the reverse, if you use book values, old appraisals, or an estimate of present worth.

Insurance protects values, not property. If you don't know exactly what those values are now, there is no possible means of insuring them safely or economically. This is a service in which we are eminently fitted to serve you.

The Canadian Appraisal Co.
Limited

364 University St., MONTREAL

TORONTO Royal Bank Bldg.

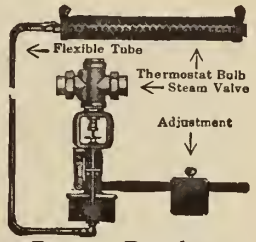
NEW YORK Equitable Bldg.

97%

of Furniture and allied lines are sold on the recommendation of the Retail Merchant

In the eyes of the Consumer he is responsible

What Does Green Wood Cost =?=



Powers Regulator No. 15

This Regulator is designed for the control of air temperatures. It is entirely self-contained, automatic, reliable, and accurate. Simple in operation, easily installed.

It's the kiln output that measures the cost of green wood. Don't let varying kiln temperature—with consequent losses through warping, checking, and case-hardening—increase that cost.

And that's exactly what happens when you depend on a man's eye to watch the thermometer, a man's hand to turn the valves. Thousands of dollars worth of lumber have been ruined because a man "forgot."

Put a *Powers Automatic Heat Regulator* on the job—it sticks, never forgets, never lays down. It will maintain the right kiln temperature—accurately and surely. You can be sure of lumber evenly cured and thoroughly dried every time. No waste of costly green wood in kiln "rejects." Let us send you proof.

Our more than thirty years of research and experience in this field is at your service.

Write for our thirty day free test offer.

The Canadian POWERS REGULATOR Co. Ltd
Specialists in Automatic Heat Control

106 Lombard Street — Toronto, Ont.

Calgary, Alta. Halifax, N.S. Montreal, Que.
Vancouver, B.C. Winnipeg, Man.

Please consult your telephone directory for local address.

(2289)

Every Day in Every Way

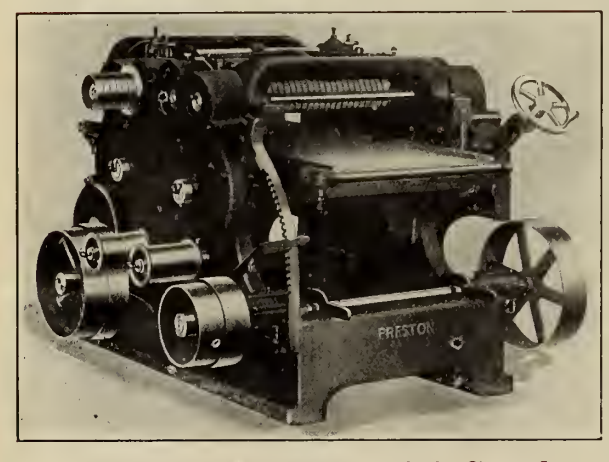
Our Machines

are becoming

Better and Better!

and it's no wonder because our whole waking hours are spent in endeavoring to improve them so that they will be

100% PERFECT
and give
100% SATISFACTION
to our customers



No. 123 "Preston" High Speed Ball Bearing Surface Planer

This cut shows planer equipped with specially selected S.K.F. ball bearings, sectional roll and sectional chipbreaker, round cylinder with four high speed knives, and arranged to receive Stockbridge electric knife grinder and jointer. Cylinder speed, 5,000 R.P.M.

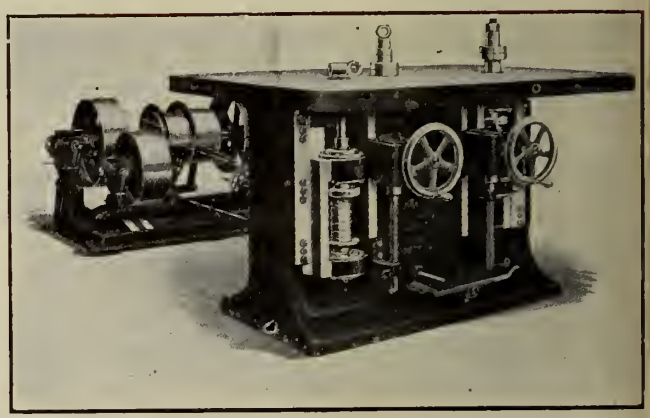
Two points are guaranteed: (1) It will reduce your sanding costs 75%. (2) It will increase your production 100%.

No. 132 "Preston" 36" Band Saw

Made with or without guards. The wheels are all steel, covered with solid rubber bands, ¼ in. thick. Solid web lower wheel is supplied when desired.

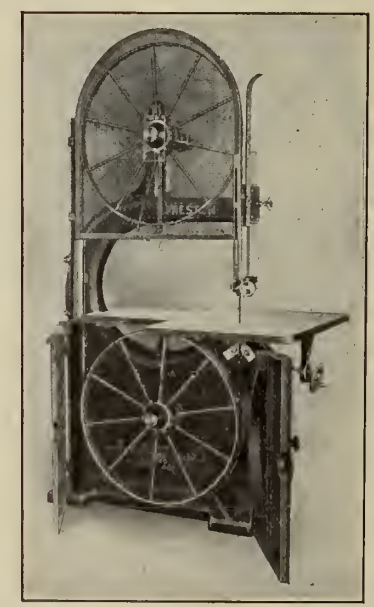
We guarantee that breaking of saws will be reduced to a minimum on this machine by reason of our almost perfect tension device and style of guide.

Supplied with 3 H.P. motor for individual drive if desired.



No. 162 "Preston" High Speed Ball Bearing Shaper

Guaranteed advantages over babbit bearing machine:—100% more work, 100% better work. Made either single or double spindle. Detachable spindle tops. Specially selected ball bearings.



Specialists in Ball Bearing Woodworking Machinery

The Preston Woodworking

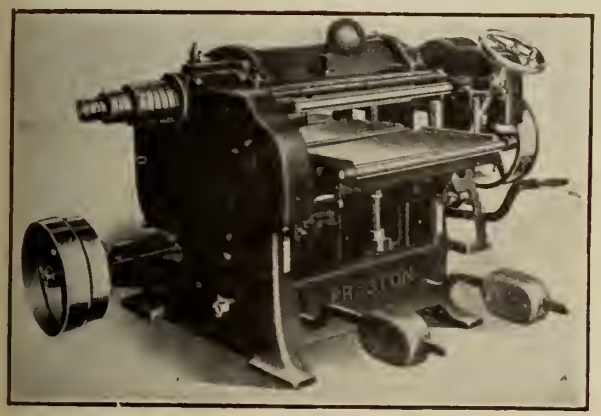
PRESTON, ONT.,

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

To our friends whom we met at the Canadian National Exhibition last year and to them and others who might expect to see us there this year, we voice regret that, owing to the exceptional amount of business on our books, we had not time to prepare an exhibit this year. We will miss them and can only hope that our absence will not make us forgotten entirely.

Our Motto

"Service and Satisfaction"



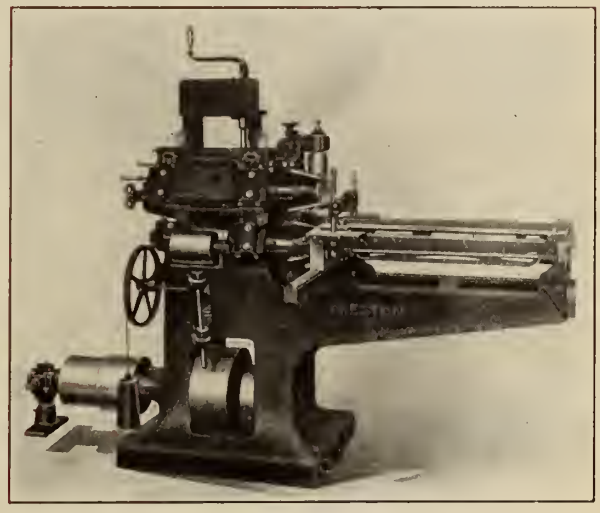
No. 121 "Preston" Heavy Pony Planer

This cut shows standard machine. Can be built with:

(1) Straight roll or divided rolls or sectional roll and chipbreaker.

(2) Square cylinder or round 4 knife cylinder.

(3) Babbit Bearings or S.K.F. Ball Bearings.



No. 184 "Preston" Tenoning Machine

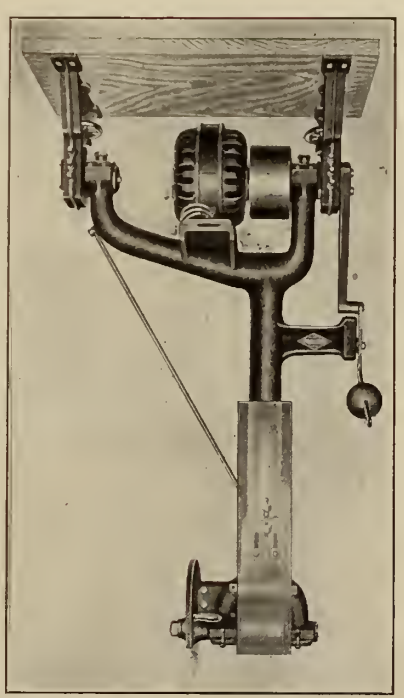
Features of Construction

(1) Genuine Whitney self-lubricating bearings.

(2) Powerful belt drive.

(3) Large heavy base and very rigid in all parts.

(4) Practically all adjustments made from front of machine.



Our Aim

To build Woodworking Machinery as nearly perfect as possible.

"Competition never bothers the firm that progresses first."

No. 152 "Preston" Motor Driven Swing Cut Off Saw

Note belt guard. Built with special arrangement providing for use of an endless belt. Every requirement of a swing cut off saw is combined in this machine.

Machinery Company Limited

CANADA

We are the Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

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No. 225
Single Acting Air Compressor

Compact and Strong

This compressor possesses all the qualities that count in giving satisfactory service.

Developing pressures up to 125 lbs. it remains steady under all conditions.

Being heavy, substantial and accurately built it meets the requirements of every furniture manufacturer especially.

The Smart-Turner Machine Co., Limited

Hamilton — — Canada

GRAND RAPIDS VAPOR KILN EQUIPMENT

GRAND RAPIDS LUMBER LOADER

This loader is built with a pipe frame that can be raised and lowered by means of a ratchet and crank. Attached to the frame are forked guides to keep the stickers in vertical alignment. Proper piling eliminates warped and twisted lumber. More crooked lumber is caused by too few or irregularly placed stickers than any other cause, and well piled lumber, when steamed, will straighten out. Without this device it takes considerable time to be sure the stickers are laid straight.

RECENT INSTALLATIONS

Sligh Furniture Co., Grand Rapids, Mich., 4th order.
Lock Haven Chair Corporation, Lock Haven, Pa., 2nd order.
McCray Refrigerator Co., Kendallville, Ind., 3rd order.
Taylor Instrument Co., Rochester, N.Y., 2nd order.
Acme Red Cedar Chest Co., Chattanooga, Tenn., 2nd order.
Superior Wood Products Co., Superior, Wis., 1st order.
North Star Furniture Co., Evansville, Ind. 1st order.
Schurmeier-Whitney Co., Minneapolis, Minn., 2nd order.
Fisher Body Co., 3000 cross pilers and 3 transfers.
Seaman Body Co., 400 end pilers.
Imperial Furniture Co., 400 end pilers.
Lake Independence Lumber Co., 800 end pilers.
Cadillac Dry Kiln, 500 cross pilers.
Sligh Furniture Co., 800 end pilers.

This equipment is made for use with Grand Rapids Vapor Kilns, but it can be used with equal efficiency with any other types of kilns. This equipment is the result of the desire to meet the requirements of those who seek to solve their wood drying problems, overhead, handling, etc., in the most economical manner.

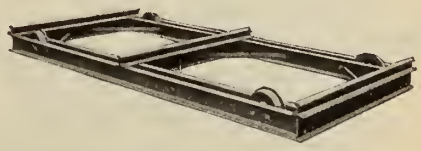
Grand Rapids Vapor Kilns and kiln equpiment are in use from Coast to Coast and abroad and the fact tha 41 per cent. of the 1922 business came from repeat orders (additional installations) indicates the perfect performance of this lumber drying method.

Technical bulletins covering practically every phase of wood curing problems will be sent you upon request, so that you may more thoroughly acquaint yourself with the Grand Rapids Vapor Kiln service and what it will mean to you. A competent engineering corp is at your command.

GRAND RAPIDS VAPOR KILN

ENGINEERS—MANUFACTURERS—CONTRACTORS
Main Office and Factory, Grand Rapids, Mich.
REPRESENTED ON THE PACIFIC COAST BY E. F. TINDOLPH,
5539 White-Henry Street Bldg., Seattle, Wash.
FOREIGN OFFICES:
A. R. Williams Machinery Co., St. Johns, N. B.
The Oliver Machinery Co., Manchester, England

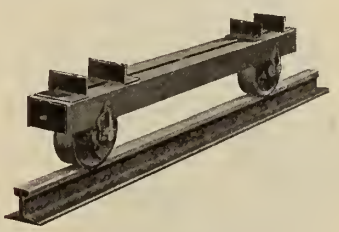
Standard End Pile (Medium)



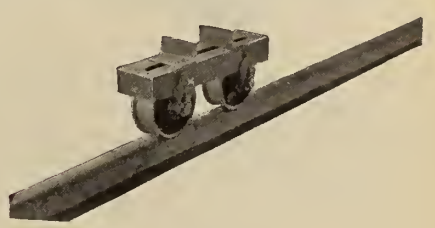
Standard Cross Pile

These transfer cars are made of structural steel to our own special design, with heavy channel sides and electric welded throughout. All wheel chilled face, roller bearing with single flanges. For straight tracks.

Cross Pile Truck



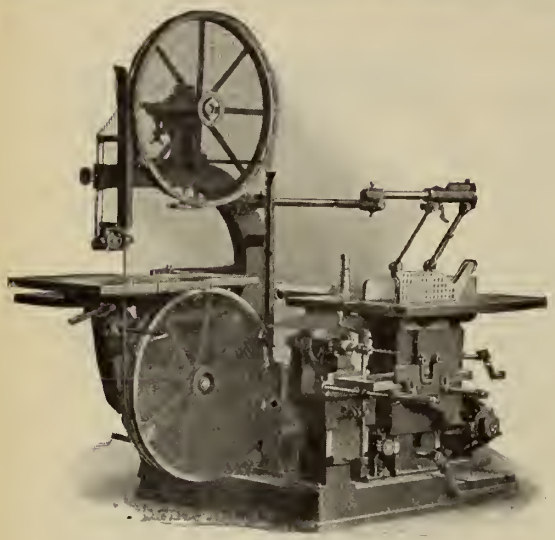
End Pile Trucks



End Pile Trucks

Made with malleable castings riveted joints, Gillette roller bearings and steel axles. All wheels malleable with double flange 2¼ face. No cast iron or bolts used. Made for 35 pounds and lighter standard rail section.

See These Machines



Crescent Universal Wood worker

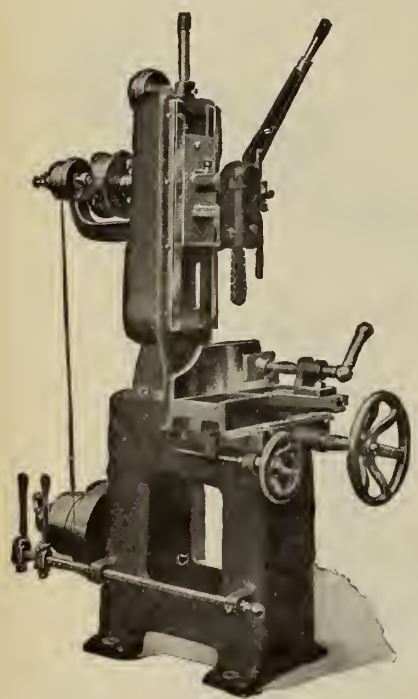
Crescent Universal Woodworker

Our latest model. Five machines in one. New features: Tilting saw table and separate column mounting the single spindle reversible shaper as a complete attachment independent of any other, and operating with its own table. Sub base arranged for motor mounting included as standard equipment.

Williams Buzz Planer or Jointer

Made in Canada. This is the latest and most approved design. The frame is of box pattern, and is cast in one piece. It is well ribbed, and of three point bearing type, ensuring perfect alignment under all conditions.

Williams Buzz Planer or Jointer (Made in Canada)

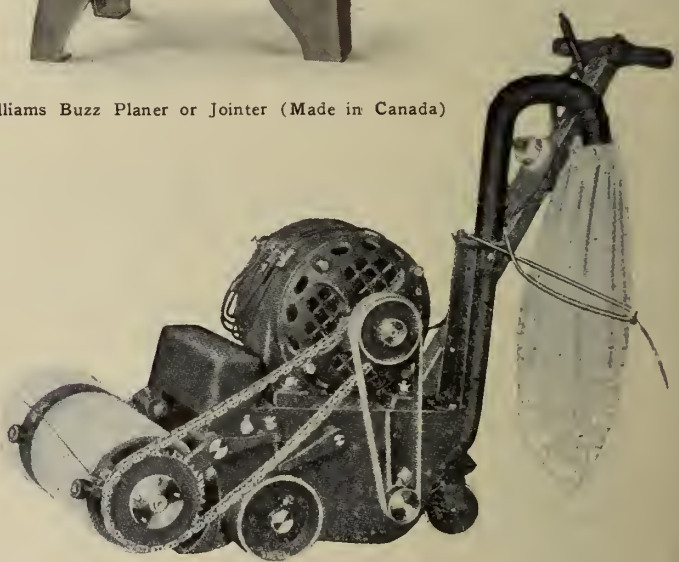


The Smith Chain Mortiser

The Smith Combined Chain and Hollow Chisel Mortiser has many features to recommend it. The Hollow Chisel Mortising attachment is equipped throughout with Hoffman Ball Bearings. Easily placed in position. This machine is ideal for cabinet makers, sash and door manufacturers, furniture manufacturers, etc.

See the "WILLIAMS" Exhibit in Machinery Hall Canadian National Exhibition

and call and see us at our headquarters and main warehouse 64 Front St. W., Toronto



"American Universal" Floor Surfacing Machines

This surfacing Machine transforms dirty, old, and partly varnished or painted floors into floors like new ones quickly and economically. Newly laid floors are also easily and quickly brought to a clean, smooth finish. Write for descriptive folder.

THE A. R. WILLIAMS

Established 1878 **Phone—Adelaide 0020**

HALIFAX, N. S. **ST. JOHN, N. B.** **MONTREAL, P. Q.**

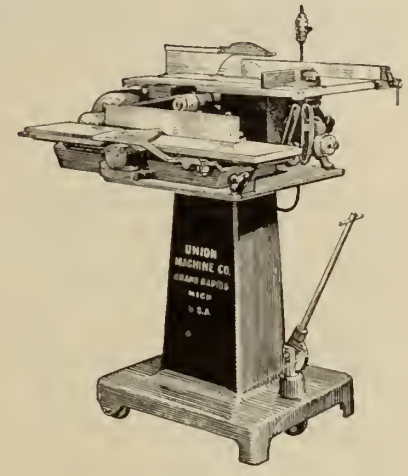
at the C.N.E.

Machinery That Safeguards Your Profits

Each Machine Illustrated is a Recognized Leader in Its Class

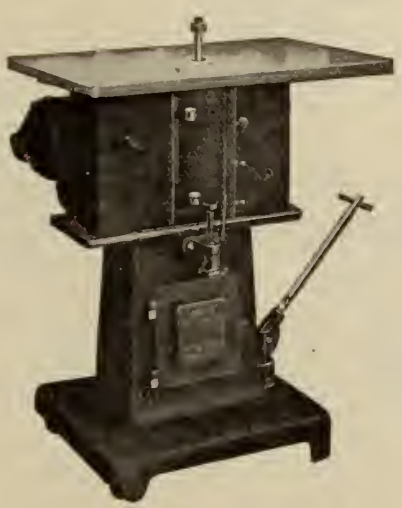
Combination Jointer and Universal Saw Bench

By using a single motor with a single switch and set of wires, a single base, belt, etc., the cost of this combination machine is brought so low that it can well be afforded by anyone having any use for such a machine.



Union Portable Single Spindle Shaper

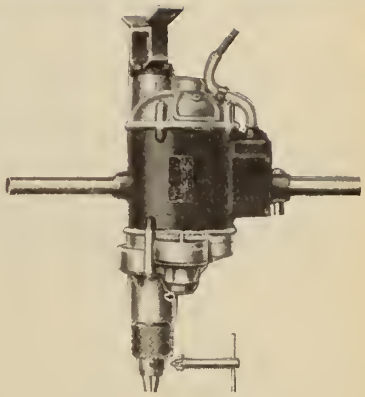
A thoroughly practical machine, made as nearly perfect as modern manufacturing methods, the highest type of mechanics, and the best of materials permit.



Baldor Electric Motors

Ball bearing, single phase motor of excellent starting and running characteristics. Ideal for machine tool drive.

Baldor Electric Motors



Hisey Electric Drills and Reamers

Equipped with the highest grade ball bearings on every part that turns. Compression springs prevent creeping of spindle bearings. Bakelite brush holder yoke. Detachable plug for cord.

The Motor is not a stock proposition, but is built specially for the drill by Hisey themselves. Economical, efficient, powerful.

If it's Machinery— Write "Williams"

MACHINERY CO., LIMITED

64-66 FRONT ST., WEST, TORONTO

TORONTO, ONT, WINNIPEG, MAN. VANCOUVER, B. C.

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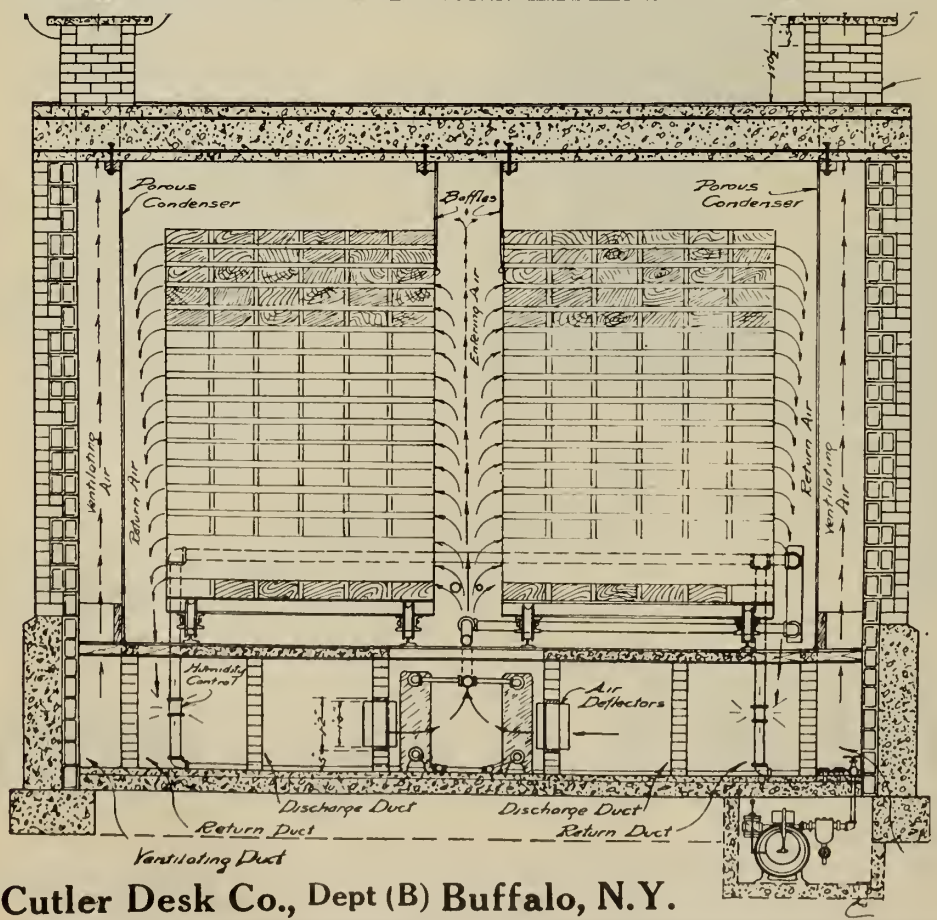


Ford Motor Co. and Fisher Body Corp. are installing

Cutler Dry Kilns

Better Drying in Half the Time

In these kilns air is forced into tunnels A, through heaters in centre tunnel, up between and through piles, past porous condenser—which removes moisture—and back to blower.

Drying is accomplished in half the time because of positive and rapid circulation, and a large part of the fuel is saved by re-circulating heated air.

Get details from our Catalog and join the army of prominent and satisfied users.

Cutler Desk Co., Dept (B) Buffalo, N.Y.

Fifteen Moistats for Old Kilns and Four New National Kilns Equipped with Moistats for Motor Wheel Corporation

THE Motor Wheel Corporation of Memphis, Tennessee, is one of the largest spoke manufacturers in the world. The first MOISTAT SYSTEM was ordered for their **National Kiln** on June 21. It was tested Thursday, July 19. On Saturday, July 21, Mr. W. C. Brock, vice-president, ordered fourteen more, all to go into **National Kilns** already on the ground. At the same time he ordered four new 100-foot **National Kilns** equipped with MOISTAT SYSTEMS.

Other orders received cover plants located over the entire eastern half of the United States. No amount of silver-tongued persuasion would have sold these orders unless the plant owners could actually see the dollars-and-cents-value of installing the MOISTAT SYSTEM in their kilns.

Send for complete descriptive literature on the MOISTAT and list of installations, also a copy of our catalog, if you have not received one.

The National Dry Kiln Company

1117 East Maryland Street, Indianapolis, Indiana

Branches: Albany, N.Y.—Memphis, Tenn.

NATIONAL DRY KILNS

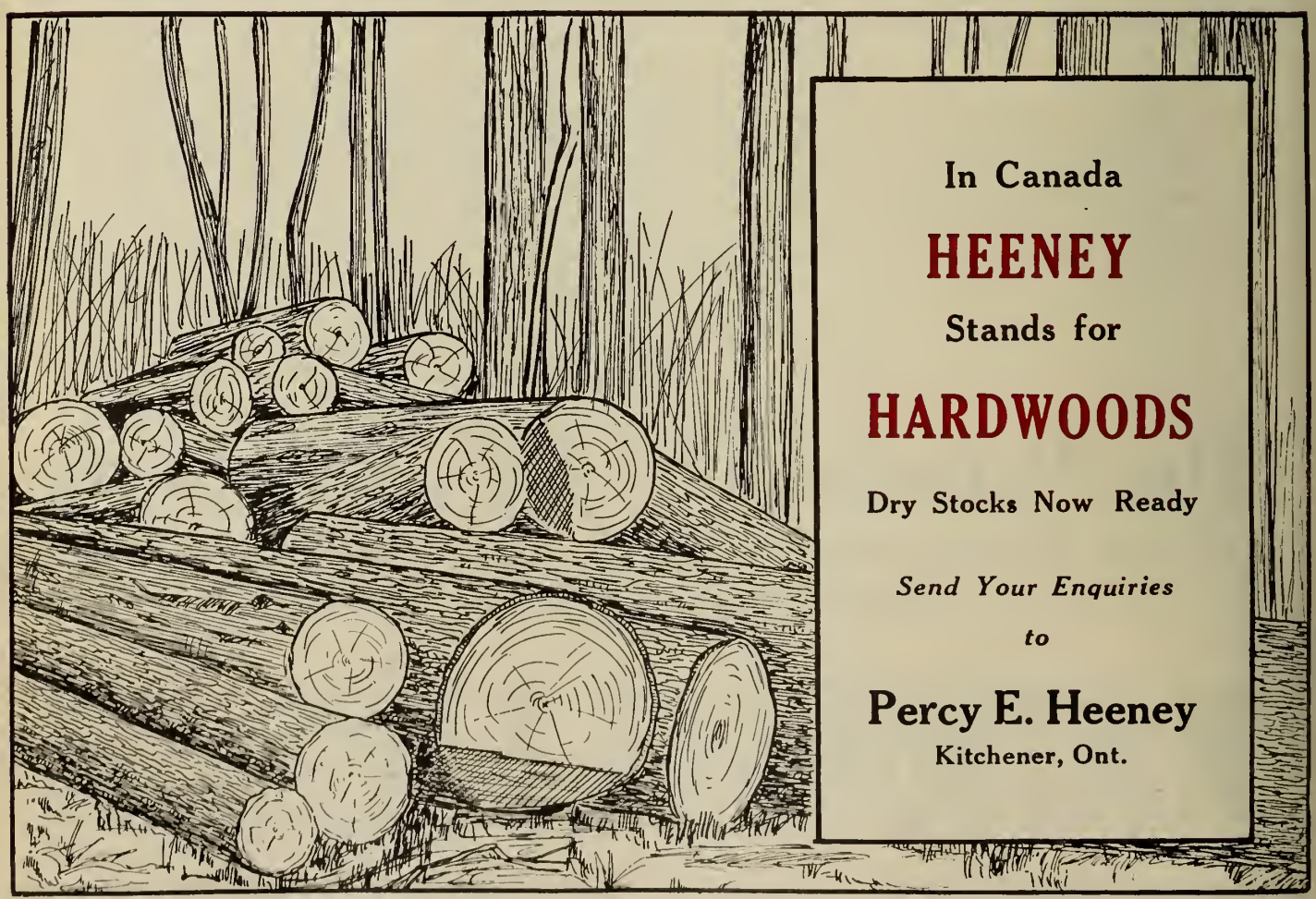
PEDWELL

The
PEDWELL HARDWOOD LUMBER CO.

PEDWELL Since 1883 Service to Hardwood Users

Office and Yard
FT. SPADINA AVE. TORONTO

HARDWOODS



In Canada

HEENEY

Stands for

HARDWOODS

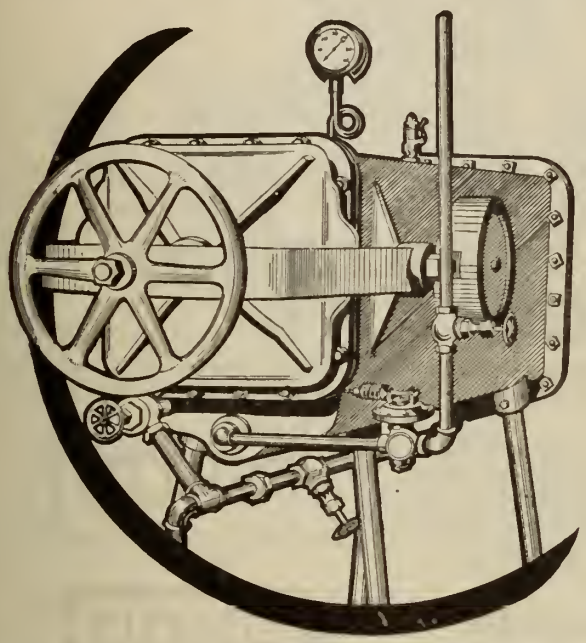
Dry Stocks Now Ready

Send Your Enquiries

to

Percy E. Heeney
Kitchener, Ont.

Wood Steaming Retort



Wood Bending Manufacturers:

This is one of our

Perfection Retorts

which we guarantee will save you

50% Less Breakage

in your bending department than your present process; that your stock will dry in your forms or presses in one-third less time; that you will have no stained stock; that your stock will retain its shape much better after being bent; that it will dry in your dry kiln in one half less time and that your steam consumption will be reduced at least 90 per cent.

The door can be opened and closed in ten seconds, and it is steam and water tight and for this reason can be placed anywhere in your factory.

Compare this IMPROVED RETORT with your present steam boxes, then write us for our Booklet on Progressive Wood Steaming.

Made in Preston, Ontario

Perfection Wood Steaming Retort Co.

PARKERSBURG — WEST VIRGINIA

Humidigraph

The latest help in drying—
Ask us about it—

The STANDARD Dry Kiln Co.

1542 McCarty St., Indianapolis, Ind.

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

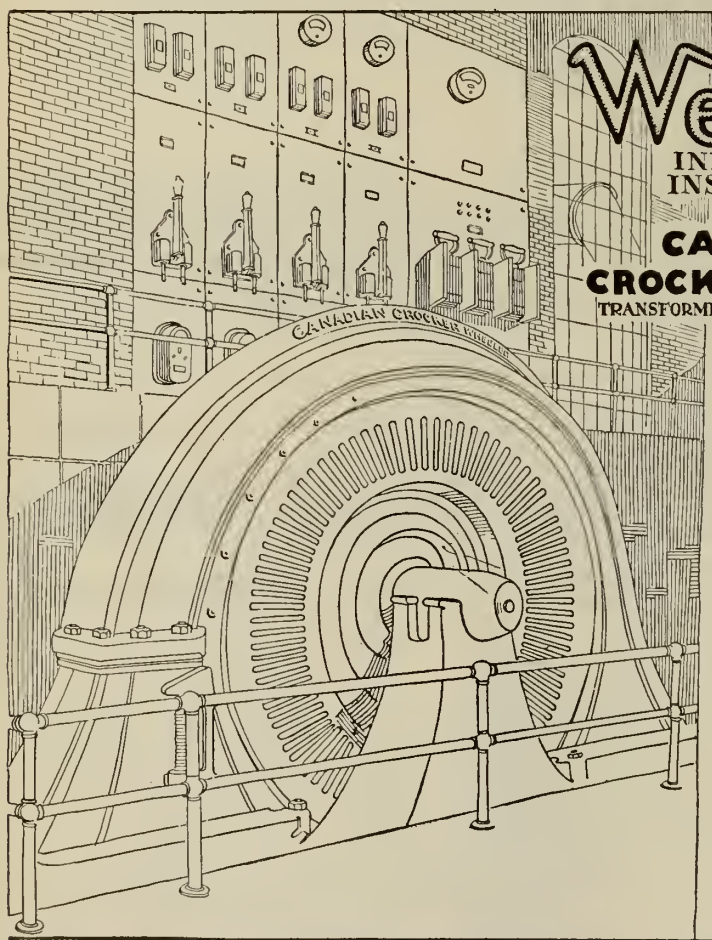
Canada Wood Specialty Co. Limited

ORILLIA ONTARIO

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

POWER APPARATUS

OF ESTABLISHED REPUTATION AND DEPENDABILITY



Weston
INDICATING INSTRUMENTS

ESTERLINE
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CANADIAN CROCKER-WHEELER
TRANSFORMERS & ELECTRICAL MACHINERY

CONDIT
OIL SWITCHES & CIRCUIT BREAKERS

SANGAMO
INTEGRATING INSTRUMENTS

C-H
CONTROL APPARATUS & HEATING EQUIPMENT

Wagner
SINGLE PHASE MOTORS

THREE E
ELECTRICAL ENGINEERS EQUIPMENT Co CHICAGO U.S.A.
SWITCH BOARD & PROTECTIVE FITTINGS

Northern Electric Company
LIMITED

MONTREAL TORONTO WINDSOR CALGARY
HALIFAX HAMILTON WINNIPEG EDMONTON
QUEBEC LONDON REGINA VANCOUVER

"Makers of the Nation's Telephones"

MANUFACTURING
Manual Telephones
Automatic Telephones
Wires & Cables
Fire Alarm Systems
Radio Sending and receiving Equipment

DISTRIBUTING
Construction Material
Illuminating Material
Power Apparatus
Household Appliances
Electrical Supplies
Power & Light Plants
Marine Fittings

"Fibro" Wood Carvings

Made in Canada

JOHN WALTER & SONS LIMITED

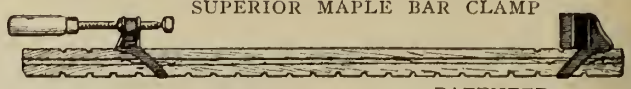
KITCHENER :-: ONTARIO

KANE VEGETABLE GLUE

The Superior Glue

Kane Manufacturing Co.
1832-42 S. Clark St.
Chicago — Illinois

SUPERIOR MAPLE BAR CLAMP



PATENTED

Why Superior Maple Bar Clamps are Better

Superior Maple Bar Clamps give greater utility because of superior features of construction. They have adjustable head and tail blocks of malleable iron that swivel so as to hold firmly at any angle.
These better clamps cost no more than most ordinary clamps. Approval and adoption by Grand Rapids Factories and Training Schools is indicative of their exceptional merit.
Write for Prices and Catalog Showing Line of Clamps and Hand Screws.
Profitable Territory Open Salesmen May Carry as Side Line.

Superior Hand Screw & Clamp Co.
1033 W. Leonard St., Grand Rapids, Mich.

The Peter Hay Knife Co., Ltd.

Manufacture the Best
PLANER KNIVES and CUTTERS
OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited
GALT, ONTARIO

The Best for YOUR Work

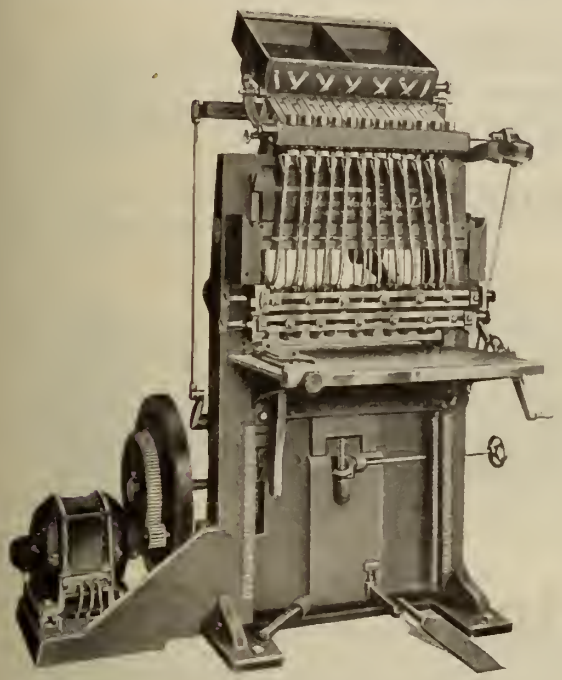
MAPLE LEAF SAWS

Maple Leaf Saws are fast cutting and retain their edge longer than any other saws, because they are made from extra refined Razor Steel, tempered by our own secret process.

Shurley - Dietrich Ltd.
Galt - Canada
Warehouse and repair branch at Vancouver, B. C.

"The largest all-Canadian saw Manufacturers"

INCREASE YOUR BOX PRODUCTION WITH YATES NAILING MACHINES



Because of its wide range of work and quick adjusting features Yates No. 1230 Open Back Nailing Machine has met with the unqualified approval of Box-Makers.

Can be used as a cleater, framer, or bottomer. Is equipped with adjustable blocks for supporting cleats when used as framer or bottomer.

Clinching device is built into the table of machine and can be instantly adjusted. Machine can be arranged for belt or direct motor drive.

These and many other features are found in Yates Nailing Machines, which insure ease in operation, save time and labor.

P. B. Yates Machine Co. Ltd.
HAMILTON - ONTARIO

One of the Largest Blower Systems in Operation—Designed and Installed by "Toronto Blower" Experts

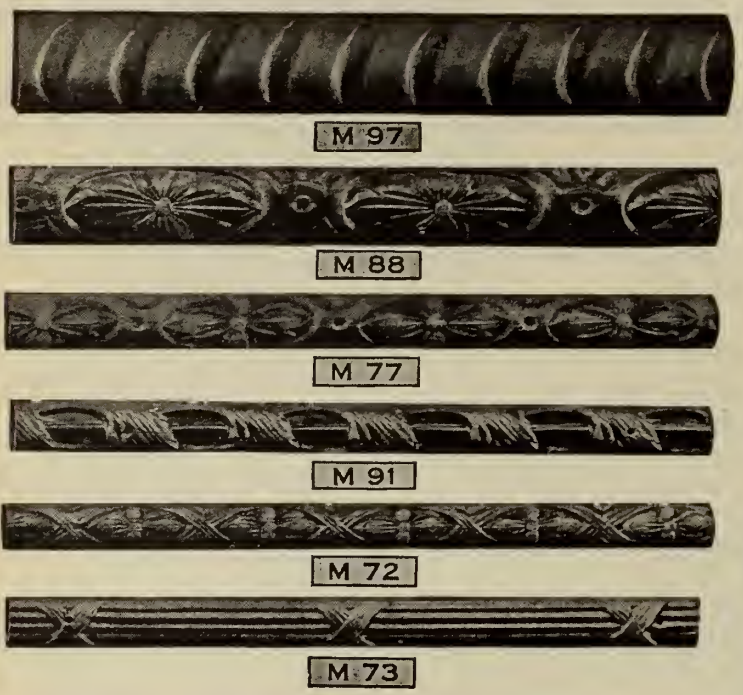
No matter how large or how complicated your requirements, it is safe to say our engineers can design a system that is at once the most efficient and economical.

The photograph above illustrates this fact. It shows the blower system in the Pembroke Shook Mills as it stands today. The first system was built ten years ago, and as the mills grew, additions were made to the blower system, all work being carried out by us.

Ask the Pembroke Shook Mills what they think of Toronto Blower Systems.

TORONTO BLOWER CO.

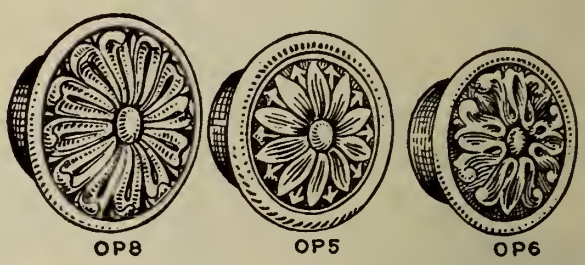
156 Duke St., Toronto



MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

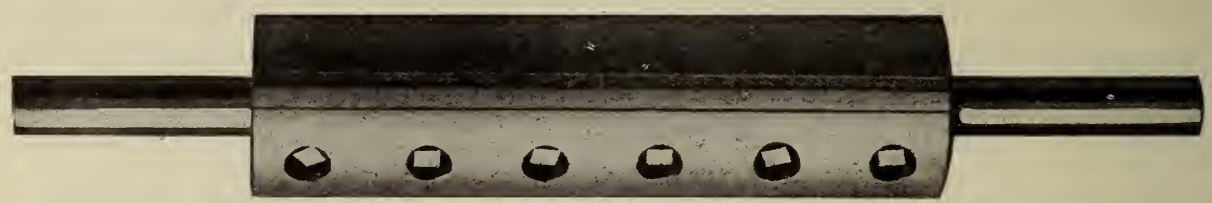
ROSETTES A new Period item to accompany the knobs.



Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

The Shimer Round Safety Cylinder with High Speed Knives



A Round Safety Cylinder that will Appeal to the Buyer and the User for three Reasons:

The first is our adjusting nut for setting the knives. It is the only cylinder with properly located adjusting nuts for setting the knives, which, with our way, can be set to 1-1000 of an inch.

The second is our way of holding the knife without tapping into the head.

The third is the correct angle of cut for the knives.

Made for any of the different Makers' Machines and in Any Length Cylinder

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SHIMER CUTTER HEAD CO., OF CANADA, LIMITED

Manufacturers of Cutter Heads, Safety Cylinders and Grinders

GALT, ONTARIO

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Glass Paper, Flint Sand Paper, Garnet Paper

IN SHEETS AND ROLLS FOR ALL PURPOSES

Rolls 50 yards long, 18 in., 20 in., 24 in., 30 in., 36 in., 40 in., 42 in. and 48 in., wide

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"KLISE" mouldings are carved, not pressed. Made in several hundred classic, period designs, in various sizes and shapes. Catalogue of legs and samples of mouldings sent on request. Send us your designs or samples of carvings for quotation.

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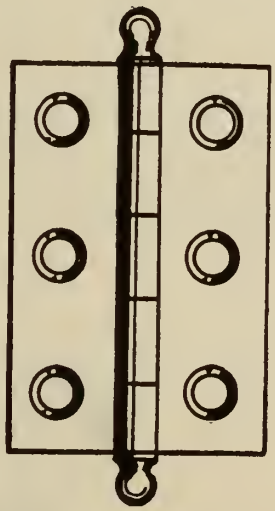

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1" 1¼" 1½" 1¾" 2"

In any desired finish

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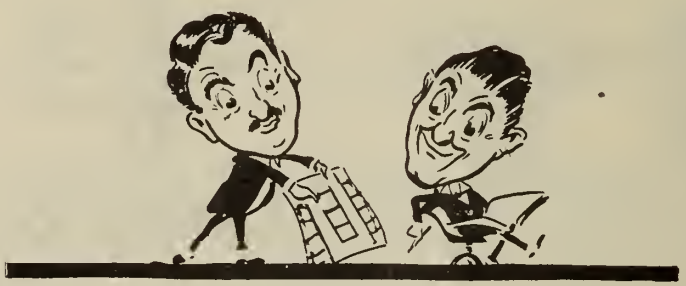

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ONLY those who know the handicaps confronting the inexperienced glue user can appreciate the blessings of exemption from worry. For the glue user who likes peace of mind there is no offering better than a glue of known value and dependability; one that will stand much abuse and still produce high quality results.

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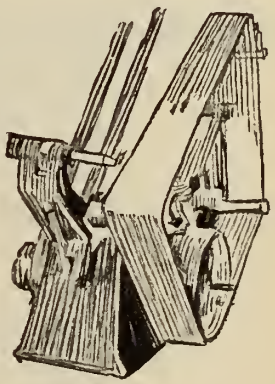
Today, due to the vision and progressiveness of machinery makers, gigantic drum, belt and disc sanders enable two or three men to do in a few hours as much work as ten men could have done in a month half a century ago.

Not only the entire woodworking industry, but the general public as well, owe a debt of gratitude to the designers and builders of these machines which have done so much to reduce costs through multiplying production.



It is significant that Herman Behr & Co., Inc., has progressed hand-in-hand with the advanced sanding requirements of the woodworking industries. From a few well-made items fifty years ago the Behr Catalog today lists nearly ten thousand abrasive items in every grit, form, and dimension recognized by modern abrasive engineers.

These products range from fine pouncing paper covered with abrasive as fine as talcum powder to cloth goods coated with grit so coarse that they could readily be taken for roofing material—an almost endless variety of coated abrasives in yearly quantity sufficient to pave Lincoln Highway from coast to coast.

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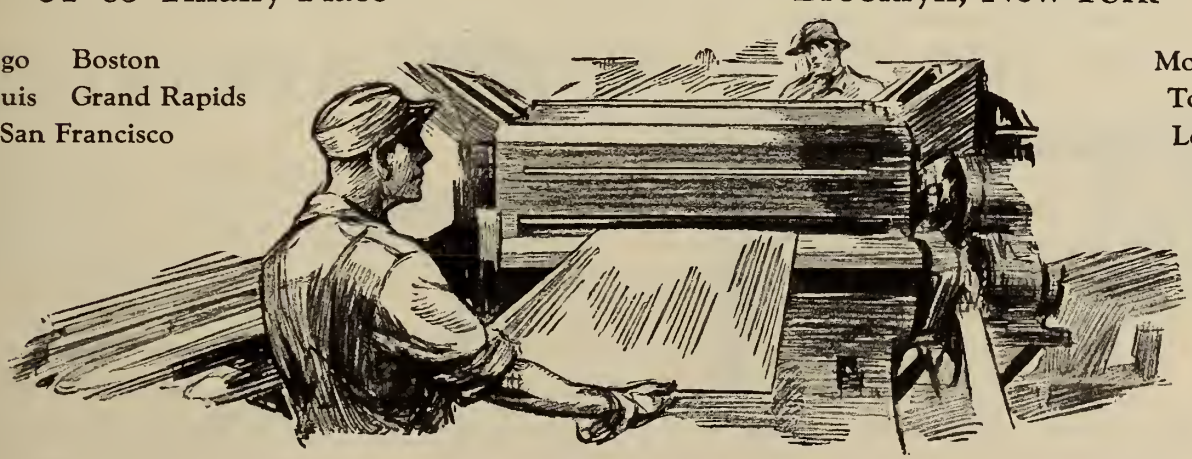

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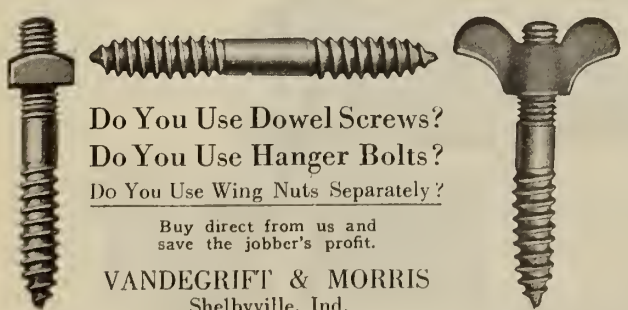

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Ritter Appalachian Oak stands unexcelled for either the manufacture of fine furniture or for elegance in interior trim

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Shrinkage of lumber, which often leads to serious defects such as warping, checking, and honey-combing during the process of drying, is greatly influenced by the character of the wood structure.

Ritter Appalachian Oak is of slow, uniform growth and therefore of a mild texture. Hence, the shrinkage of its wood structure is much less and causes fewer damaging defects than occur in the harder, more dense oaks.

Consequently, Ritter Appalachian Oak can be kiln dried much more satisfactorily with less waste and depreciation in grade, and in as much as one-fourth less time and with less danger of damage than is possible with harder, heavier oak.

This means speed in the dry kiln operation, economy of material, and a minimum overhead expense per thousand feet of satisfactorily seasoned lumber. All of these advantages, together with the excellent machining and finishing qualities of Ritter Appalachian Oak, contribute toward the realization of good profits on the completed product.

For Full Particulars Consult Our Representative or Write Us.

W. M. RITTER LUMBER COMPANY

Largest Producer of Hardwoods **Annual Capacity—130,000,000 Feet**

General Offices **COLUMBUS, OHIO**

RITTER

APPALACHIAN OAK

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE, LA.

Southern Office: MEMPHIS, TENN.
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MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

BEDNA YOUNG'S TENNESSEE HARDWOODS

Our brand new modern band mill is now cutting

Qtd. White and Red Oak.
Plain White and Red Oak.
Qtd. Red and Sap Gum.

Kindly let us have your enquiries.

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The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

Ash, Oak, Gum, Poplar, Hickory, Walnut, Chestnut, Beech, Maple, Elm, Sycamore, Cottonwood. Quotations promptly.

J. V. STIMSON & CO.
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means
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The most critical Woodworkers have used DUNN'S GLUES for nearly Half a Century.

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Let us solve your glue problems. Our Service Department is at your disposal and places you under no obligation whatsoever.

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THOMAS W. DUNN CO.
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Exquisite in grain and color

THURN-MAXSON Hardwoods are sympathetic to the Craftsman's skilled hands. They are of such a fine even texture and the grainings and colorings are of such exquisite beauty they inspire the craftsman to his highest efforts.

Let us quote you—OAK, CYPRESS, GUM, etc. Any grade, any quantity.

Thurn-Maxson Lumber Co.
SOUTH BEND, INDIANA
Owners of Chas. O. Maus Lumber Company

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

Mills Coal Grove Ohio
General Offices: 33 Rector St. New York City

A Permanent Lumber Service

AFTER several years of inactivity we are now cutting on our modern fully equipped mills at Manistique and Little Lake, Upper Michigan. The timber behind these mills was purchased many years ago by the Stack interests from the then "unlimited" supply. Its quality, particularly the maple and birch, is the envy of northern mill men among whom this tract is famous.

This timber will run the mills to full capacity for fifteen to twenty years. The 40,000,000 feet annual cut will run:

15,000,000 ft. maple annually
6,000,000 ft. birch annually
2,500,000 ft. beech annually
2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually
the balace in Spruce and Tamarack.

Our exceptional service, grades, and manufacture will be maintained. "Low freight rate shipments by water to Toronto, Montreal, Owen Sound, Port Arthur, and other Great Lakes and St. Lawrence River Ports. Conveniently located also for rail shipments to inland points by the C.P.R. or Soo line."

We will be pleased to hear from old friends and from new ones who can understand and appreciate what permanent connection with such a source of supply would mean.

STACK LUMBER CO.

ESCANABA MICHIGAN

Southern Hardwoods

MISSISSIPPI DELTA GUM
The Best That Grows

OUR mills are producing some beautiful stock at the present time, and we can assure prompt delivery in any quantity.

Plain and Quartered Red and Sap Gum, Plain and Quartered White Oak, Plain Red Oak, Cottonwood, Cypress, Ash, Elm.

MISSISSIPPI VALLEY HARDWOOD CO., INC.

Bandmills: Memphis, Tenn., Clarksdale, Miss.
Sales Office: Memphis, Tenn.
MISSISSIPPI DELTA GUM The Best That Grows

The Best of Southern Hardwoods

OAK ASH
GUM ELM
MAGNOLIA
SYCAMORE
COTTONWOOD

All our hardwoods are carefully manufactured from selected stock and liberally graded. You will find our prices right and our service prompt.

Get our quotations on the next lot you need

SOUTH TEXAS LUMBER COMPANY

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General Sales Office: Houston, Texas Band Mills: Onalaska, Milvid, Connell, Dayton, Cleveland, and Fuqua

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

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We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills : Memphis, Tenn., Helena, Ark., Floyd, La.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK:

3	cars	4/4"	Fas
1	"	5/4"	Fas
5	"	4/4"	No. 1 Common
1	"	4/4"	No. 2 Common

PLAIN WHITE OAK:

5	cars	4/4"	Fas
2	"	5/4"	No. 1 Com. & Btr.
10	"	4/4"	No. 1 Com. & Sel.
7	"	4/4"	No. 2 Common

PLAIN RED OAK:

6	cars	4/4"	Fas
3	"	5/4"	Fas
3	"	6/4"	Fas
1	"	8/4"	Fas
8	"	4/4"	No. 1 Common
10	"	5/4"	No. 1 Common
2	"	6/4"	No. 1 Common

QUARTERED RED GUM:

5	cars	4/4"	Fas
4	"	4/4"	Fas. Fig.
6	"	5/4"	Fas
7	"	6/4"	Fas
10	"	4/4"	No. 1 Common
10	"	5 4"	No. 1 Common
10	"	6/4"	No. 1 Common
10	"	8/4"	No. 1 Common

QUARTERED RED GUM S.N.D.:

5	cars	5/4"	No. 1 Com. & Btr.
5	"	6/4"	No. 1 Com. & Btr.
10	"	8/4"	No. 1 Com. & Btr.

ASH:

4	cars	10/4"	No. 1 Com. & Btr.
2	"	12/4"	No. 1 Com. & Btr.
2	"	4/4"	No. 1 Common
2	"	4/4"	No. 2 Common

SAP GUM:

8	cars	4/4"	Fas
3	"	5/4"	Fas
3	"	6/4"	Fas
15	"	4/4"	No. 1 Common
8	"	4/4"	No. 2 Common
5	"	5/4"	No. 1 Common
5	"	6/4"	No. 1 Common

COTTONWOOD:

2	cars	4/4"	Fas
2	"	4/4"	x 9 — 12" Box Bds.
2	"	4/4"	x 13 — 17" Box Bds.
6	"	4/4"	No. 1 Common
2	"	4/4"	No. 2 Common

ELM:

2	cars	4/4"	Log Run
6	"	10/4"	Log Run
6	"	12/4"	Log Run

always Up to Grade -and a Little Better

Lumber doesn't grow. It must be cut from trees. While it is easy to spoil good trees in the cutting, it is impossible to get good lumber from poor trees.

This plant is situated in the centre of a field of walnut trees of unusual quality—grown, not on the thin soil of hilly timberlands, but on the fine rich soil of Iowa river valley's famous for their tall corn. In such soil the trees grow stronger, finer textured and more beautifully marked, than on ordinary lands.

We count ourselves fortunate in being able to apply our accurate methods of manufacture to the cutting of trees so splendidly endowed by nature. It is impossible to produce finer texture and marking than has made IOWA WALNUT first choice of so many fine cabinet makers.

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Representatives:
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N. F. Owings, 447 Ionia Ave. S., Grand Rapids, Mich.
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White Pine Hardwoods

The Oliver Lumber Co.
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Plain and Quartered, Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

Oak Timbers and Planking

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Office: CINCINNATI, OHIO

Canadian Representative:
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Excellent widths and lengths.
Can kiln dry and surface.
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FAMOUS LUMBER CENTER
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Our Specialities
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Prompt Shipments—from Buffalo Yards or from Mill direct to you
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M. M. Wall, Treas.
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We specialize in—WHITE ASH, OAK AND MAPLE

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Our Specialties—Quartered White Oak, Plain and Quartered Gum
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HARDWOODS
Our Specialty—West Virginia and Pennsylvania Cherry
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A complete stock of seasoned Hardwoods
Including Ash, Basswood, Birch, Cherry, Chestnut, Cypress, Elm, Gum, Hickory, Maple, Plain and Quartered Oak, Poplar and Walnut.
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T. SULLIVAN & COMPANY
NORTHERN
Gray Elm and Brown Ash
Niagara Street Corner Arthur

FRANK T. SULLIVAN
Specialties
Cherry, Walnut and Pacific Coast Woods
Main Office: 600 Ellicott Square. Yard: 2598 Delaware Ave.

We Want to Sell

1 car 4/4 1 & 2's Chestnut.

2 " 4/4 1 & 2's Plain Red Oak.

1 " 5/4 10" and wider White Oak. Step Plank.

3 " each 4/4 & 8/4 No. 1 Common & Selects Quartered White Oak 18 Months Dry.

2 " 4/4 1 & 2's Yellow Poplar Straight or Mixed Cars Band-Sawn, Soft Textured.

We operate our own Band Mill, Dry Kilns, Planers and Resaws.

Louisville Point Lumber Co., Inc.

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Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo.

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Ply Wood Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

Need Lumber?

Here is a whole pageful of remarkably good stock at exceptional prices
Check over your needs now—quick action is necessary

Mahogany (African)

		Air Dried	Kiln Dried
1"	F.A.S. (Fig'd)	7028'	
1"	"		424'
1"	" Plain	1573'	
1"	No 1 Com. (Fig'd)	8529'	
1"	" Plain	5934'	

Mahogany (Mexican)

		Air Dried	Kiln Dried
1"	F.A.S. (Fig'd)	2000'	
1"	"	1000'	973'
1¼"	"	1638'	845'
1½"	"	1262'	549'
2"	"	1650'	519'
1"	Selects		818'
1"	No. 1 Com. & Sel.		276'
1¼"	"	1262'	
1½"	"	2012'	
2"	"	1090'	

Walnut

		Air Dried	Kiln Dried
1"	F.A.S. 10" & Wdr.		860'
1"	" 6-9½"	465'	1467'
1¼"	"	4746'	539'
1½"	"	3426'	511'
2"	"	2060'	500'
2½"	"	233'	
3"	"	5245'	
4"	"	564'	
5"	"	105'	
6"	"	204'	
1"	Selects 6" & Wdr.	2484'	
1"	Selects 4" & Wdr.		707'
1½"	Selects 4" & Wdr.		517'
1"	No. Com. & Sel.	1650'	
1"	" 2-4' Short	2165'	
1¼"	"	2417'	1045'
1½"	"	407'	2233'
2"	"		707'
2½"	"	1050'	
3"	"	1628'	
4"	"	52'	
5"	"	845'	
6"	"	378'	
Thin Lumber:			
5/8"	F.A.S.		80'
Clear Squares:			
4" x 4"—14-67" Long		354'	
3" x 3"—14"-84" Long		905'	

Chestnut

		Air Dried	Kiln Dried
1"	F.A.S.	18554'	5224'
1¼"	"	1443'	
1½"	"	4505'	
2"	"	3324'	
1"	No. 1 Com. & Sel.	6298	
1¼"	"	170'	
1½"	"	4165'	
2"	"	4534'	

Mixed Plain Red & White Oak

		Air Dried	Kiln Dried
1"	F.A.S.	5690'	
1¼"	"	70'	
1½"	"	102'	
1"	No. 1 Com. & Sel.	5081'	
1½"	"	70'	
1½"	"	130'	

Plain Red Oak

		Air Dried	Kiln Dried
1"	F.A.S.	15000'	4358'
1¼"	"	739'	525'
1½"	"	3340'	
1½"	" 9 & 9½	523'	
1½"	" 10" & Wider	6884'	1808'
2"	"	2779'	516'
2½"	"	360'	
3"	"	180'	
4"	'	1628'	
1"	Selects 6" & Wider	755'	
1"	No. 1 Com. & Sel.	1524'	8380'
1¼"	"	6477	
1½"	" 10" & Wdr.	1470'	
1½"	"	2520'	
2"	"	2384	
2"	Sill Stock, 6", 8", 10"	2062'	
2½"	No. 1 Com. & Sel.	360'	
4"	"	1744'	

		Air Dried	Kiln Dried
1"	No. 2 Common	5721'	601'
Thin Lumber:			
½"	F.A.S. 10" & Wdr.	1250'	
1"	F.A.S.	6023'	13588'

Plain White Oak

		Air Dried	Kiln Dried
1¼"	"	846'	525'
1½"	"	2677'	
1½"	" 10" & Wdr.	7368'	5437'
2"	"	7146'	544'
3"	"	1146	
4"	"	1532'	
1"	Selects 6" & Wdr.	755'	
1½"	Selects 10" & Wdr.	308'	
1"	No. 1 Com. & Sel.	2957'	8332'
1¼"	"	3070'	
-½"	"	1950'	
2"	"	540'	
3"	"	1657'	
4"	"	996'	
Thin Lumber:			
½"	F.A.S. 10" & Wdr.	677'	
½"	No. Com. & Sel. 10" & Sel.	191'	

STEP STOCK

1½" x 10" & wider FAS

Pl. Red Oak	10,000'
Pl. White Oak	12,500'
Chestnut	3,500'
Birch	4,000'
Maple	3,000'

Qtd. White Oak

		Air Dried	Kiln Dried
1"	F.A.S. 10" & Wdr.		2699'
1"	F.A.S.	5300'	
2"	"	1546'	
2"	" 10" & Wdr.	616'	
1"	No. 1 Com. & Sel.	8087'	7630'
1¼"	"	5520'	
1½"	"	7228'	
2"	"	196'	

Qtd. Red Oak

		Air Dried	Kiln Dried
1" x 3-5½"	Clr. Strips	2098'	
1"	No. 1 Com. & Sel.	4888'	

Yellow Poplar (Whitewood)

		Air Dried	Kiln Dried
1"	Panel 18" & Wdr.	200'	
1"	F.A.S.	765'	4338'
1"	" S.N.D.	2105'	3023'
1¼"	"		1792'
1½"	"		1202'
2"	" S.N.D.		480'
3"	"	3029'	
3"	" S.N.D.	2769'	
4"	"	788'	
1"	Saps & Sel.	4574'	2078'
1¼"	"	1042'	1931'
1½"	"		579'
1"	No. 1 Common	8202'	
1½"	"	69'	
2"	"	654'	
2½"	"	1047'	
		Air Dried	Kiln Dried
3"	"	1008'	
1"	No. 2 Common	2916'	
Thin Lumber:			
¾"	F.A.S. S.N.D.		555'
5/8"	Saps & Sel.	3317'	
5/8"	No. 2 Common	1636'	

S.L. Yellow Pine

		Air Dried	Kiln Dried
1"	B. & Btr. Finish		11186'

Basswood

		Air Dried	Kiln Dried
1"	F.A.S. 10" & Wdr.	14489'	3279'
1"	" 6-9½"	2393'	2141'
1¼"	" White	2973'	
1½"	" "	1748'	
2"	" "	564'	848'
1"	Selects 6" & Wdr.	856'	4231'
2"	"		296'
1"	No. 1 Common	10350'	1033'
1¼"	"		259'
2"	"		634'

Birch

		Air Dried	Kiln Dried
1"	F.A.S.	6000'	77'
1½"	"	3000'	
1½ x 10" & wdr.	F.A.S.		3500'
2"	F.A.S.	957'	
3"	"	190'	
4"	"	904'	
1"	Selects	1000'	
2"	Selects	1318'	
4"	"	1140'	
1"	No. 1 Common	3000'	3097'
2"	"	1510'	
1"	No. 2 Common	1143'	

Hard Maple

		Air Dried	Kiln Dried
1"	F.A.S.	3000'	
1½"	" 10" & Wdr.	750'	
2"	"	437	
1½"	No. 1 Com. & Sel.	150'	
2"	"	437'	

Butternut

		Air Dried	Kiln Dried
1"	F.A.S.	50'	
1¼"	"	54'	
1½"	"	214'	
2"	"	154'	
1¼"	No. 1 Com. & Sel.	83'	
1½"	"	87'	
2"	"	500'	
2½"	"	101'	
2½"	No. 2 Common	157'	

Qtd. Red Gum

		Air Dried	Kiln Dried
1"	F.A.S. (Fig'd)	2964'	2449'
1"	" Unselected	8796'	394'
2"	" "	1574'	

Plain Red Gum

		Air Dried	Kiln Dried
1"	F.A.S.	3060'	
1"	No. 1 Com. & Sel.	10000'	

Qtd. Red Gum, S.N.D.

		Air Dried	Kiln Dried
1¼"	F.A.S.	6454'	
2"	"	3351'	
1"	No. 1 Com. & Sel.	10406'	

Plain Sap Gum

		Air Dried	Kiln Dried
1"	F.A.S.	7032'	

White Ash

		Air Dried	Kiln Dried
1"	F.A.S. (Tough)	5000'	
2"	" "	1075'	
2"	" (Soft)	3453'	
1½"	" (Tough)	1126'	
2½"	" "	623'	
3"	" "	3369'	
4"	" "	1000'	
5"	" "	695'	
1"	No. 1 Com. & Sel. (Tough)	3445'	
1½"	" "	2200'	
2"	" "	908'	
2"	" (Soft)	2881'	
3"	" (Tough)	1500'	
4"	" "	2824'	
5"	" "	375'	
1"	No. 2 Common "	1184'	

Cypress

		Air Dried	Kiln Dried
1"	F.A.S.	4452'	
1½"	"	2633'	
2"	"	3110'	
2"	Selects	5096'	
1½"	"	6863'	
2"	"	3128'	
1"	No. 2 Com. & Btr.	1078'	

Full line of 3 and 5 ply Panels carried in stock sizes—Walnut, Mahogany, plain and Quartered Oak, Chestnut, Birch, Gum.

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WESTERN PINE
DRY STOCK

1 x 4" & up—	"C" Select and Better	100,000'
1½ x 6" & up—	do	50,000'
2 x 6" & up—	do	70,000'
This is good wide Stock		
1½ x 6 & up—	No 1, 2 and 3 SHOP	135,000'

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LIMITED
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BRAND

HARDWOODS
Oak, Ash, Gum, Poplar, Maple, Elm, Cottonwood, Sycamore.

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Lath, Lumber, Dimension.

VENEERS
Door Panel, Piano Rim, Cypress Battery Stock.

OAK FLOORING
"Chickasaw Brand"

Another Addition to our Facilities

We take pleasure in announcing that we are nearing completion of an electrically driven planing mill, with annual capacity of 20,000,000 feet. This is being equipped with 2-side and 4-side surfacers, a resaw and moulder, enabling us to size hardwood forest products to any dimension desired and to produce all kinds of moulding, bevel siding, etc.

Our other facilities include: three band mills cutting 40,000,000 feet of hardwood and cypress lumber, a sawn veneer plant producing 10,000,000 feet, and progressive dry-kilns handling 12,000,000 feet per annum.

Our service is being broadened as our facilities increase and we have not only the desire but also the ability to meet the most exacting requirments of fabricators and distributors of all items in the accompanying panel. Send us your orders and inquiries.

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MEMPHIS, TENNESSEE

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The qualities of hardness and strength which make Birch ideal for lodge furniture, give it precedence wherever permanence is required of a fine cabinet-wood.

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Quick Shipment
Write or wire for Prices

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We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar both plain and quarter sawed. Sound Wormy Chestnut, Cypress and Ash.

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The quality is there
The price is right

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Honduras

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MAHOGANY

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Peters Avenue and The River

NEW ORLEANS, LA.

Chicago Office: Room 208, 128 N. Wells Street

Long-Bell Hardwoods are dependable

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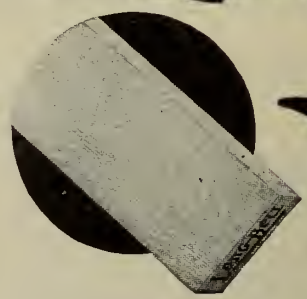

Logs from our own virgin forests. Each log selected and cut for the purpose for which it is best adapted.

Class of timber producing excellent widths and lengths.

Manufactured in our own Hardwood Mills, equipped with modern band machinery.

Manufacture supervised by experienced hardwood men.

Thoroughness given every detail of manufacture.

Particular care given to uniformity of thickness — carefully edged, equalized and trimmed.

End-butted with mitre toothed saws.

Carefully sorted at chains.

Drying yard arranged to give thorough circulation to stocks in pile.

Every detail in sticking and drying carefully observed to insure best results.

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Same care exercised in loading in cars as in manufacture.

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Dry Lumber in Buffalo for Quick Shipment

TENNESSEE SCENTED CEDAR

1 in.—52,000
1¼ in.— 1,500

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	59,000	10,500	163,000	198,000
1¼ in.	31,000	.....	9,000	15,000
1½ in.	21,200	100	9,000	101,000
2 in.	8,000	.....	7,000	54,000
2½ in.	4,500	.....	4,300	3,000
3 in.	21,700	.....	4,500	4,000
4 in.	9,300	.....	900	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,600	.....	3,000	.....
1 in.	87,000	.....	165,000	96,000
1¼ in.	12,000	1,800	52,000	60,000
1½ in.	26,700	2,600	105,000	25,000
2 in.	16,000	.....	25,000	38,000
2½ in.	2,000	.....	.....	.....
3 in.	1,300	.....	.....	.....
4 in.	1,500	.....	300	.....

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	17,000	7,000	15,900	3,000
⅝ in.	55,000	173,000	6,000	26,000
1 in.	85,000	81,000	35,200	84,000
1¼ in.	50,000	12,600	.....	.....
1½ in.	33,000	28,000	.....	1,500
2 in.	28,000	58,000	3,000	10,000
2¼ in.	3,200	3,200	.....	.....
2½ in.	110,000	39,000	2,000	1,800
3 in.	39,000	20,000	.....	.....
3½ in.	4,500	3,000	.....	.....
4 in.	41,000	17,800	.....	.....

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	44,000	191,000	.....	.....
⅝ in.	.....	53,000	21,000	2,400
1 in.	107,000	66,000	13,500	71,000
1¼ in.	62,000	90,000	2,000	2,100
1½ in.	62,000	78,200	5,000	2,500
2 in.	71,000	124,000	26,000	10,000
2¼ in.	1,500	1,400	.....	.....
2½ in.	94,100	34,000	.....	.....
3 in.	39,800	29,000	5,000	12,000
4 in.	18,600	8,600	.....	.....

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	.....	.....	4,700	500
1 in.	10,200	6,400	11,000	1,400
1¼ in.	5,900	.....	4,900	.....
1½ in.	400	.....	4,000	.....
2 in.	.....	.....	7,400	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	.....	.....	.....
¾ in.	3,900	.....	6,300	3,000
⅝ in.	.....	.....	400	800
1 in.	56,000	400	65,000	3,700
1¼ in.	21,000	27,300	79,000	5,800
1½ in.	20,000	500	29,500	200
2 in.	700	.....	22,000	5,700
2½ in.	.....	.....	.....	.....
3 in.	.....	.....	1,200	.....
4 in.	600	.....	200	.....

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	20,000	26,500	.....	2,500
1¼ in.	15,400	15,000	2,000	9,000
1½ in.	.....	1,800	5,200	.....
2 in.	8,100	7,400	300	4,700
3 in.	.....	.....	.....	.....

QUARTERED SAP GUM

	1 & 2	No. 1C	No. 2C
4/4	.....	1,800	.....
5/4	.....	9,000	.....
8/4	.....	18,000	800	.....
10/4	.....	15,000	14,300	.....
12/4	.....	300	.....	300

POPLAR

	1 & 2 18" up	1 & 2	No. 1 Com.	Bright Saps
¾ in.	.....	.....	700	200
⅝ in.	.....	20,000	24,100	55,900
1 in.	.....	84,000	49,000	10,700
1¼ in.	6,300	7,000	23,000	10,000
1½ in.	5,300	6,000	2,000	32,000
2 in.	.....	13,300	29,000	71,800
2½ in.	.....	.....	.....	14,800
3 in.	.....	2,600	8,000	21,000
4 in.	.....	6,000	4,500	9,200

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and
Genuine Louisiana Red Cypress

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4/4	No. 1 Common & Better	150,000′
8/4	" " "	100,000
10/4	" " "	150,000
12/4	" " "	150,000
14/4	" " "	20,000
16/4	" " "	40,000
4/4 x 4"	Clear face and better Strips	40,000

BIRCH

4/4	No. 1 Common.	70,000
4/4	No. 2 Common	100,000

All at our Bay City Mills — Can give Service and Quality

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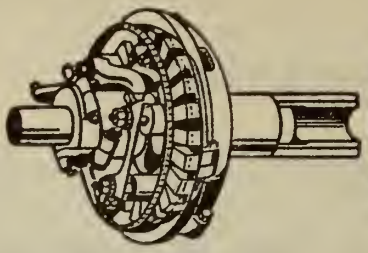
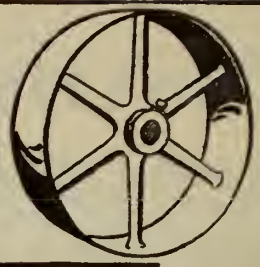
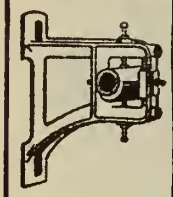
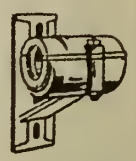

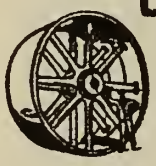

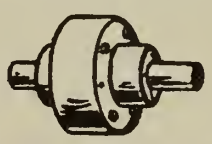

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Shafting	Iron Centre Wood	Floor Stands	Belt Clamps
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Rope Wheels	Hangers	Rope Dressing	Grain Shovels
Gearing	Pillow Blocks	Sprockets	Car Pullers
Steel Split Pulleys			Trippers, etc., etc.

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45,000′ 4/4″ FAS.
65,000′ 4/4″ No. 1 Com & Sel.
75,000′ 4/4″ No. 2 Com.

PLAIN RED OAK
12,000′ 3/4″ FAS.
39,000′ 3/4″ No. 1 Com. & Sel.
46,000′ 4/4″ FAS.
76,000′ 4/4″ No. 1 Com. & Sel.
57,000′ 4/4″ No. 2 Com.
37,000′ 4/4″ Sound Wormy.

QUARTERED RED GUM
14,000′ 3/4″ Com. & Btr.
47,000′ 4/4″ FAS.
14,000′ 4/4″ No. 1 Com. & Sel.
40,000′ 4/4″ FAS FIGURED.
23,000′ 4/4″ No. 1 Com. & Sel. FIG.
48,000′ 5/4″ No. 1 Com. & Sel.
74,000′ 8/4″ FAS.

PLAIN RED GUM
18,000′ 4/4″ FAS.
74,000′ 4/4″ No. 1 Com. & Sel.
13,000′ 5/4″ FAS.
70,000′ 5/4″ No. 1 Com. & Sel.
75,000′ 6/4″ No. 1 Com. & Sel.

PLAIN SAP GUM
12,500′ 5/8″ FAS.
19,000′ 3/4″ No. 1 Com. & Sel.
17,000′ 4/4″ Boxboards—9-12″
83,000′ 5/4″ FAS—6 to 12″.
38,000′ 5/4″ FAS, 13″ & up.
81,000′ 5/4″ No. 1 Com. & Sel.
47,000′ 6/4″ No. 1 Com. & Sel.

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CANADIAN
WOODWORKER
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Encouraging Figures

Information concerning the continued activity of the building industry gives plenty of ground for optimism. According to figures issued by MacLean Building Reports, Limited, Toronto, contemplated construction work to the value of $36,500,000 was reported on during July of this year, as compared with $30,900,000 for July of last year. In addition to this, contracts to the value of $30,842,500 were awarded during the month of July. Of this amount $7,500,000 was for residences; $1,000,000 for apartments, churches and hospitals; $1,000,000 for office buildings; $1,500,000 for schools and $675,000 for stores. These figures cover July only.

According to other figures from the same source, the total value of construction contracts awarded during the first seven months of this year was $196,165,700; divided as follows: Public Works, $58,212,600; General buildings $137,953,100. The total value of contracts awarded during this period, covering the various classes of general buildings is as follows:

Class of Building	No.	Value
Apartments	89	$ 5,936,000
Churches	102	3,777,300
Factories	213	21,558,600
Public Garages	122	1,306,900
Hospitals	34	2,188,500
Hotels and Clubs	85	2,422,300
Office Buildings	111	9,437,500
Public Buildings	87	4,478,800
Residences	10835	53,759,500
Schools	257	10,617,900
Stores	550	7,907,800
Theatres	14	218,400
Warehouses	134	14,343,600

The figure $196,165,700 compares favorably with $159,146,200 for the corresponding period last year and with $168,995,400 for the same months in 1920.

Thus it may be judged that the building industry is in an extremely active and healthy condition and that those allied industries whose prosperity depends to a large extent upon the activity in the building field have every reason to expect a satisfactory volume of business during the remaining months of this year.

Distant Fields

"A number of Kitchener furniture workers have decided to seek employment in American furniture factories" recently stated an employee of a well known Kitchener plant during a call on the editor of the "Canadian Woodworker." He intimated that he was making a change and further suggested that this movement bid fair to effect a goodly number of furniture makers. Whether or not there is anything in this suggestion the Canadian woodworking industry needs every skilled mechanic it has.

It is a serious matter for any one to break up his home and move to another place and more especially to another country where the environment and living conditions will undoubtedly be different. Before taking such a step one should give the matter more than ordinary consideration and should be fully advised as to all matters pertaining to both living and working conditions in the section to which he proposes to move.

In the past there has been a movement of Canadian mechanics towards the U. S. automobile centres and this has taken away a limited number of men from our woodworking plants. Some of these latter have since returned as they find that while they are able to earn more below the line, both living and working conditions in Canada are more to their liking.

Coming to the furniture industry, recent figures indicate that the average rate paid skilled workers in U. S. plants is but two cents per hour or about five per cent higher than the average wage received by Canadian furniture workers. There is hardly enough difference here to be attractive, particularly when one considers that the cost of living is as high if not higher in the States than in Canada. A difference of two cents an hour figures out at a dollar for a week of fifty hours. It would take several years at this rate to make up for the expenses incurred for moving. Some may cite isolated examples and contend that the figure given is not correct but it is the average difference between Canadian and U. S. rates.

More than this, it is generally conceded that the employees of American furniture factories are required to apply themselves more closely than they do in Canadian plants, the output per man being considerably higher than in Canada. That being the case the workman below the line earns this additional two cents an hour and perhaps some more on top of that. This leads to the suggestion that were the workmen in Canadian woodworking plants to work as hard as they do in U. S. factories they could expect to receive an equally satisfactory return for their efforts.

To the employer it should hardly be necessary to suggest that the problem of retaining skilled workmen is even more important than that oft discussed question of our future supply of trained woodworking mechanics, because reducing the labor turnover and holding present employees is of vital importance today, instead of something that may give worry in the near future. Further the same attractive working conditions, this includes wages, that would tend to hold present employees will also go far to solve the problem of a future supply of desirable employees.

Furniture Manufacturer Reviews Western Conditions

"The furniture industry as well as other lines will benefit from the big crop that is assured and that will be harvested in a few weeks. The improvement to trade however will be only gradual and I do not believe that business in the west will assume its former proportions for some time," Mr. D. Hibner said to the "Canadian Woodworker and Furniture Manufacturer," in commenting on his recent trip through the four western provinces which he and Mrs. Hibner have just completed.

"There is little furniture moving at present in the trade in the western provinces except at Vancouver where conditions are good. Retailers are still stocked with goods bought a year or more ago or purchased from U. S. manufacturers last spring who like many other manufacturers across the line want to get rid of their surplus products at the end of the season and dump them into this country at cost prices. The westener naturally takes advantage of the situation if he is in a position financially and sees some returns on his expenditure. In other instances of course the dealer has his money tied up in the business and feels that he is not in a position to buy at the present time, especially since the farmer who has money is conservative and will not purchase for the time being. Another factor which is met with in the west as well as in the east is the fact that the people forget about furniture in the summer months owing to the lure of outdoor life occasioned by the automobile. The westerner perhaps more than the easterner is the least concerned with the furnishing of his home owing to the prairie life under clear summer skies.

"Looking back over the furniture industry in the last forty years in this country, including its set-backs and revivals on greater scales than ever, and taking into consideration that the past nine years have been abnormal owing to the war and its after-effects I do not think there is any ground for pessimism. The revival will be gradual but it is sure to come, the first signs of which should be apparent this fall. There is still money in the west but those who have it are conservative and justly so. The many fine residences that I noticed were being erected in the towns and cities indicates that many bank books show a neat balance.

"The conversations which I had with many western farmers show that they are in a frame of mind which means the conservation of funds. The farmer on the prairies has profited by his lessons of the past and therefore he will be more careful with the money secured for his wheat. Nevertheless the big crop and the consequent income to the grain grower must and will work to the benefit of business all over Canada and is ample reason for optimism over the future."

Mr. Hibner, who with Hartman Krug of the Krug Furniture Company, Ltd., is among the oldest manufacturers of Furniture in the country, retired from business about three years ago. He is residing in Kitchener and is president of the Kitchener Furniture Company, Ltd., retailers, acting in an advisory capacity.

Border Cities Furniture Exhibition

The retail furniture dealers of Windsor, Ontario, working through the Windsor Furniture Dealers Association, are staging a furniture exhibition at the Windsor Armories September 15 to 21. This is to be a pretentious affair patterned after the furniture exhibition held recently in Detroit.

This exhibition differs from the displays of this nature that have been attempted, in that all exhibits are being made under one roof. In addition an added attraction in the shape of a Style and Fashion display is being made. This feature will tend to ensure a large attendance of ladies and as they have much to do with the selecting and purchasing of articles for the home, their presence in large numbers will tend to increase the results that will surely follow.

The exhibition will be under the management of R. M. Jaffray, Chamber of Commerce Bldg., Windsor. Mr. Jaffray has had considerable experience with displays of various kinds, notably with the Border Cities Electrical Show which has been conducted for some years under the auspices of the Border Cities Electrical Association.

Every effort is being made to make individual exhibits as attractive as possible. The entrance to the exhibition is surrounded by well kept lawns and flower beds, while inside the decorations are to be all that could be desired. The centre of the space will be devoted to the fashion display while the furniture booths will be along the walls.

At a meeting of the Windsor Furniture Dealers Association held on August 3rd, we understand that the entire floor space was placed under the contract, including the "Style and Fashion" section, and that all display booths were allotted. From the interest being displayed and the showing made the success of the exhibition is claimed to be a foregone conclusion.

The furniture manufacturers, through the Furniture Manufacturers Association, are donating a sum of money to help defray expenses. In addition they are also providing all the partitions. These will be available as required for similar exhibits in other centres.

The furniture dealers of Windsor are to be commended on this forward step. There are so many other attractions which tend to take people away from their homes that the value of good furniture and attractive home surroundings is apt to be overlooked. A display of this kind in a central building is bound to have a good educational effect and if held regularly will undoubtedly have a marked influence in creating a desire for a well furnished home and thus tend to increase the demand for better furniture.

If this exhibition is as successful as present indications suggest, it will undoubtedly be followed by similar displays in other centres.

Is Canadian Furniture Well-Made?

Furniture Manufacturers Express Views on Competition From American Centres—Grade for Grade Canadian Furniture Sells for Less—Tendency to Look to the U. S. for Exclusive Designs.

Why should a Canadian retail furniture dealer advertise and actively push the sale of furniture the product of American furniture manufacturers? Is the Canadian made product inferior in any way or do Canadian furniture makers find it difficult to compete in price with their fellow manufacturers below the line? These queries are prompted by the accompanying advertisement which was clipped recently from a Toronto paper. Nor does this seem to be an isolated instance for since this announcement appeared a similar suite by the same maker was featured in the advertisement or another large furniture house.

If one were to read between the lines the inference is that the product of this particular plant, to say the least, is in a class by itself or in other words is superior to Canadian made furniture. Such is not the case, however, for the output of the plants of various Canadian furniture makers compares very favorably with similar grades produced in the States as far as quality goes, while considering the price and value offered, it is commonly accepted that grade for grade prices are lower on the Canadian side of the line.

Canadian advertisement suggesting superiority of American Furniture

This may be due to keener competition, to improved methods or better equipped plants but, regardless of the underlying reasons, the fact remains that those who have had an opportunity to compare the value offered by Canadian and American furniture manufacturers have no hesitation in asserting that on many lines prices are lower in Canada. More than that it is generally conceded that on the average the furniture manufactured in Canada is superior in construction, workmanship and finish.

After all there is nothing unreasonable in this. With the exception of a limited number of extremely large American furniture factories the average Canadian furniture plant compares very favorably with the average plant in the U.S.

Canadian workmen are skilful, industrious and painstaking while the retail dealers of the country are insistent in their demands for well made furniture. The chief handicap under which the Canadian furniture industry labors is that of the duty which is imposed on certain classes of essential material and supplies and the long freight haul on all imported lumber.

What Furniture Manufacturers Think

A number of Canadian furniture manufacturers have expressed their views to the "Canadian Woodworker and Furniture Manufacturer" on the question of American competition in the furniture field. The concensus of opinion seems to be that competition from American furniture is not a factor in the Canadian field even though the Government figures indicate furniture importations to the value of $2,000,000 annually. This is a point that should be given careful consideration for that sum represents approximately ten per cent. of the annual value of the Canadian product and would mean a nice increase in the output of Canadian plants. Some of the views outlined are as follows:

"American furniture is not a great factor on the Canadian market," stated one prominent furniture manufacture, "except to the same extent that there Paris gowns and Rolls-Royce cars will always be sold in every country to those who desire something exclusive. There is little if any competition from American furniture as Canadian prices on good furniture are really less than American prices. On the medium priced production lines the American prices are somewhat lower, but not enough to lay goods down here at competitive prices.

"There is a demand in Canada, but it is limited, for odd lines which it is not commercially possible to manufacture, and they, I presume, will always be imported to a limited extent. It is quite true, however, that from the standpoint of design, workmanship and finish, Canadian furniture is superior, grade for grade, to American furniture, and the values are unquestionably much better."

* * * * * *

"We are sorry that the store in question, which is supposed to favor Canadian made goods over all others, allowed

this type of advertising to appear in connection with this suite," remarked one Kitchener manufacturer. "It is an unwarranted reflection on Canadian products and on Canadian workmanship.

"We do not know the extent to which American furniture is a factor in Canada. In view of the fact that furniture prices are higher in the United States than in Canada for the same articles, it cannot be a very large factor. About the only furniture coming into Canada at the present time, and that to a limited extent only, is that purchased by Canadian dealers who wish a distinctive style in certain suites to be used for store display purposes chiefly. As you know United States manufacturers are producing a very great variety of designs at the present time, and having a large market they can readily dispose of all they make. In Canada, unfortunately, at the present time the demand is for medium grade goods almost exclusively, the demand for the higher priced lines being almost entirely absent, making it impossible for Canadian manufacturers to produce exclusive designs in sufficient quantities to make it profitable.

"Taking Canadian furniture as against United States furniture we feel quite safe in saying that for quality and price it is equal of any produced, and the only excuse that may exist for bringing in United States furniture to-day might be the design."

* * * * * *

Other well-known furniture men expressed themselves as follows:

"American furniture is not a very big factor in the sale of our particular line of goods on the Canadian market. In addition I am of the opinion that competition from American furniture is decreasing rather than increasing.

"There is a certain demand for some classes of furniture that are not made in Canada but it is very limited and it consists of people who want something exclusive and possibly very high priced, articles that it would not pay the Canadian manufacturers to produce on account of the limited market and also the fact that the Canadian dealer expects the manufacturer to carry the stock."

* * * * * *

"We are informed from Custom returns that imports on household furniture during the last calendar year, (1922), amounted to less than two million dollars, which includes European as well as the United States imports, the larger proportion coming from the States. You are no doubt familiar with the Hoosier and Sellers kitchen cabinets, which are sold extensively in Toronto. Then there are dental cabinets of the higher grades, which are not produced in Canada at all, and perhaps the samples purchased for paterns by the Canadian manufacturers, make up a large portion of all imports.

"No doubt there is a demand for a certain amount of furniture not produced in Canada, for the reason that some customers are still of the opinion that anything imported is preferable, just like New York or Paris gowns and hats.

"On the question of quality we are most emphatic. The quality, construction and finish (according to grades) compares favourably with furniture produced anywhere, of which the Canadian manufacturers may well be proud."

* * * * * *

"I also noticed the advertisement to which you refer," stated another Kitchener manufacturer. "The only explanation that can be offered is the fact that it is a special suite and is likely being exhibited, because no other store in Toronto would be carrying this particular suite. We have had this experience with many dealers who request us to allow them a certain suite for themselves, but when we put it up to them for a quantity for that centre for a given period they do not wish to commit themselves. In other words, they like the manufacturer to carry the stuff, and yet expect to have individual design and exclusive lines.

"Insofar as workmanship and finish are concerned, I recently had the opportunity of comparing goods in the Grand Rapids market, and we do not have to take a second seat to the American market for any of our goods. In fact, had we the opportunity of placing our line in the American market, duty free, I feel confident that we could have sold our entire output for the coming year. As far as the writer knows, American furniture is not an important factor except in the case of individual suites, or in the case of extremely cheap goods which are practically being dumped into this market.

"I understand that there is a considerable movement of cheaper goods via Chicago for the West, the impression being they can be laid down for less than the wholesaler has to pay for the goods laid down from Ontario. This is certainly a matter that should be more fully discussed immediately to eliminate this competition."

* * * * * *

"We consider that high grade furniture can be manufactured in Canada just as well as in the United States, but owing to the duty we are required to pay on our raw materials it is only reasonable to expect that our prices should be somewhat higher than American prices. During the past year, however, we have noticed that American furniture is selling in some cases at a much higher price than we are able to command. This, no doubt, is due to the business boom they have been enjoying across the border."

* * * * * *

From the foregoing it will be seen that very little competition is felt from outside sources. If it should develop, as suggested by one manufacturer, that considerable quantities of cheap furniture are being imported by Western dealers this phase should receive immediate attention. A little educational work might convince such Western retailers as are buying in the States that they can spend their money to as good advantage, if not better, with Canadian manufacturers.

This incident tends to emphasize the advisability of maintaining quality at all times and of establishing a reputation of producing none but dependable goods. It further emphasizes the value of direct to consumer publicity for it is likely that the underlying motive behind this advertisement was to take advantage of the extensive advertising which this particular manufacturer does.

Another thought is that such incidents as this should tend to remind Canadian Furniture manufacturers that they should bend every effort to reduce their costs and keep the price of their product within reasonable limits or otherwise outside competition may at any time become a reality.

Export Opportunities

A firm in Westmorland, England, ask for quotations on the following kinds of wooden handles: 500 dozen ash spade and 2,000 dozen hay fork, rake and manure fork handles; 2,000 dozen navy and railroad pick handles and 1,000 dozen miners' pick handles, English, Scotch and Welsh patterns. Hickory is desired, but maple would be considered if samples were furnished; hickory hammer and axe handles; broom handles made of any cheap soft wood. Refer to inquiry No. 2032.

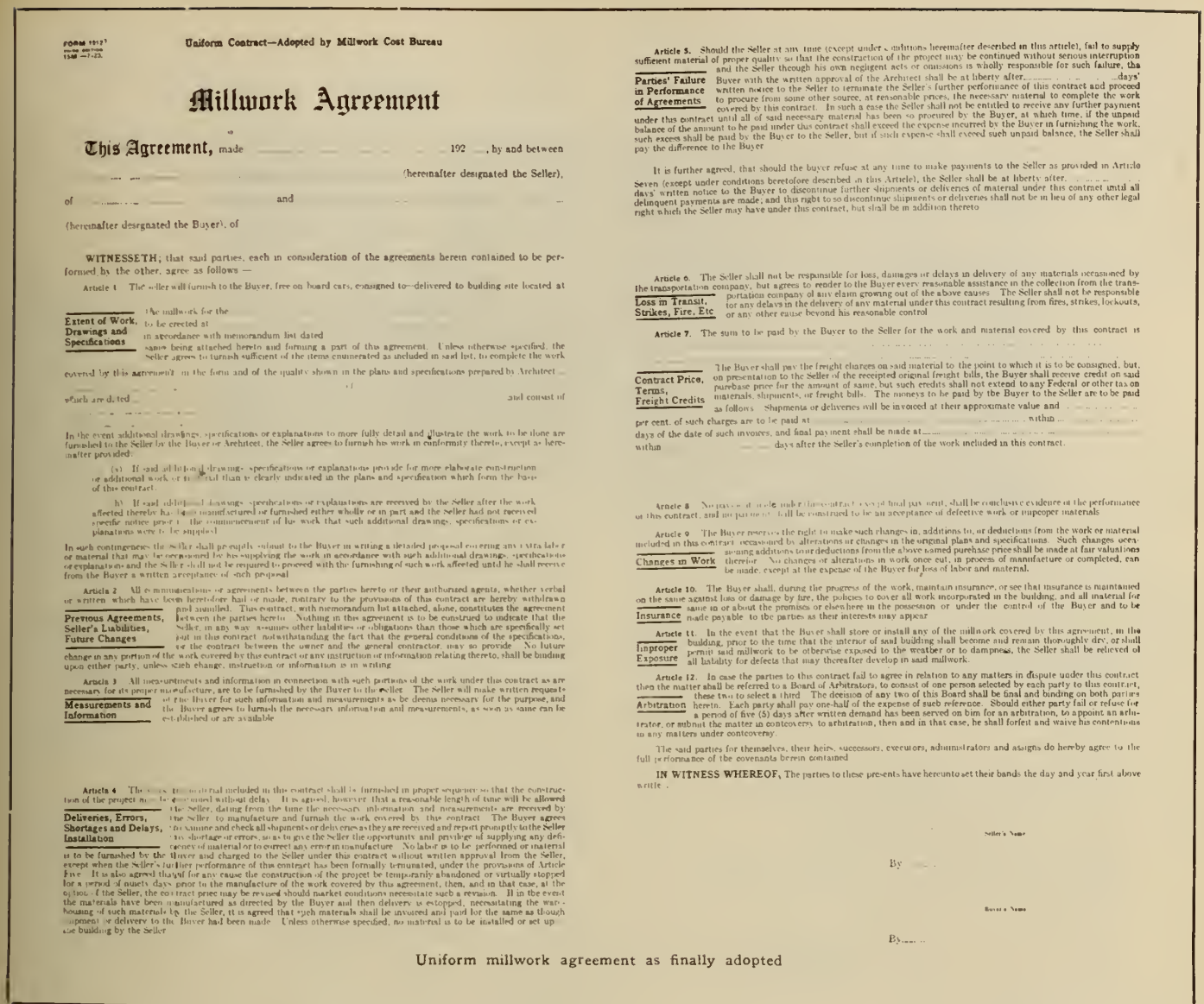
A Preston (England) firm ask for quotations on doors with 4 panels, 6 panels and 3 longitudinal panels at the bottom and one horizontal panel at the top, in 1 gross lots. Further information in possession of the editor. Refer to inquiry No. 2036.

Particulars and prices desired on split staves for cooperage either on a f.o.b. or c.i.f. basis are requested by a United Kingdom firm. Refer to inquiry No. 2038.

A Preston (England) firm ask for quotations on plywood in alder, oak or Oregon pine, 3-ply and 4-ply Refer to inquiry No. 2037.

A British commission agent, established in Port-au-Prince for eight years, wishes Canadian connection in cheap line of wooden-seated chairs. Refer to inquiry No. 1872.

An old-established firm in Antigua would like to stock Canadian bedroom furniture. If interested refer to inquiry 2074 when writing.



Uniform Contract—Adopted by Millwork Cost Bureau

Millwork Agreement

This Agreement, made 192 , by and between

(hereinafter designated the Seller),

of and

(hereinafter designated the Buyer), of

WITNESSETH, that said parties, each in consideration of the agreements herein contained to be performed by the other, agree as follows —

Article 1. The seller will furnish to the Buyer, free on board cars, consigned to—delivered to building site located at

Extent of Work, Drawings and Specifications the millwork for the to be erected at in accordance with memorandum list dated same being attached hereto and forming a part of this agreement. Unless otherwise specified, the Seller agrees to furnish sufficient of the items enumerated as included in said list, to complete the work covered by this agreement in the form and of the quality shown in the plans and specifications prepared by Architect of which are dated and consist of

In the event additional drawings, specifications or explanations to more fully detail and illustrate the work to be done are furnished to the Seller by the Buyer or Architect, the Seller agrees to furnish his work in conformity thereto, except as hereinafter provided:

(a) If said additional drawings, specifications or explanations provide for more elaborate construction or additional work or material than is clearly indicated in the plans and specification which form the basis of this contract.

(b) If said additional drawings, specifications or explanations are received by the Seller after the work affected thereby has been manufactured or furnished either wholly or in part and the Seller had not received specific notice prior to the commencement of his work that such additional drawings, specifications or explanations were to be supplied

In such contingencies the Seller shall promptly submit to the Buyer in writing a detailed proposal covering any extra labor or material that may be occasioned by his supplying the work in accordance with such additional drawings, specifications or explanations and the Seller shall not be required to proceed with the furnishing of such work affected until he shall receive from the Buyer a written acceptance of such proposal

Article 2. All communications or agreements between the parties hereto or their authorized agents, whether verbal or written, which have been heretofore had or made, contrary to the provisions of this contract are hereby withdrawn and annulled. This contract, with memorandum list attached, alone, constitutes the agreement between the parties hereto. Nothing in this agreement is to be construed to indicate that the Seller, in any way assumes other liabilities or obligations than those which are specifically set out in this contract notwithstanding the fact that the general conditions of the specifications, or the contract between the owner and the general contractor, may so provide. No future change in any portion of the work covered by this contract or any instruction or information relating thereto, shall be binding upon either party, unless such change, instruction or information is in writing

Previous Agreements, Seller's Liabilities, Future Changes

Article 3. All measurements and information in connection with such portions of the work under this contract as are necessary for its proper manufacture, are to be furnished by the Buyer to the Seller. The Seller will make written requests of the Buyer for such information and measurements as he deems necessary for the purpose, and the Buyer agrees to furnish the necessary information and measurements, as soon as same can be established or are available

Measurements and Information

Article 4. The [illegible] material included in this contract shall be furnished in proper sequence so that the construction of the project may be continued without delay. It is agreed, however, that a reasonable length of time will be allowed the Seller, dating from the time the necessary information and measurements are received by the Seller to manufacture and furnish the work covered by this contract. The Buyer agrees to examine and check all shipments or deliveries as they are received and report promptly to the Seller any shortage or errors, so as to give the Seller the opportunity and privilege of supplying any deficiency of material or to correct any error in manufacture. No labor is to be performed or material is to be furnished by the Buyer and charged to the Seller under this contract without written approval from the Seller, except when the Seller's further performance of this contract has been formally terminated, under the provisions of Article Five. It is also agreed that if for any cause the construction of the project be temporarily abandoned or virtually stopped for a period of ninety days prior to the manufacture of the work covered by this agreement, then, and in that case, at the option of the Seller, the contract price may be revised should market conditions necessitate such a revision. If in the event the materials have been manufactured as directed by the Buyer and then delivery is stopped, necessitating the warehousing of such materials by the Seller, it is agreed that such materials shall be invoiced and paid for the same as though shipment or delivery to the Buyer had been made. Unless otherwise specified, no material is to be installed or set up in the building by the Seller

Deliveries, Errors, Shortages and Delays, Installation

Article 5. Should the Seller at any time (except under conditions hereinafter described in this article), fail to supply sufficient material of proper quality so that the construction of the project may be continued without serious interruption and the Seller through his own negligent acts or omissions is wholly responsible for such failure, the Buyer with the written approval of the Architect shall be at liberty after days' written notice to the Seller to terminate the Seller's further performance of this contract and proceed to procure from some other source, at reasonable prices, the necessary material to complete the work covered by this contract. In such a case the Seller shall not be entitled to receive any further payment under this contract until all of said necessary material has been so procured by the Buyer, at which time, if the unpaid balance of the amount to be paid under this contract shall exceed the expense incurred by the Buyer in furnishing the work, such excess shall be paid by the Buyer to the Seller, but if such expense shall exceed such unpaid balance, the Seller shall pay the difference to the Buyer

Parties' Failure in Performance of Agreements

It is further agreed, that should the buyer refuse at any time to make payments to the Seller as provided in Article Seven (except under conditions heretofore described in this Article), the Seller shall be at liberty after days' written notice to the Buyer to discontinue further shipments or deliveries of material under this contract until all delinquent payments are made; and this right to so discontinue shipments or deliveries shall not be in lieu of any other legal right which the Seller may have under this contract, but shall be in addition thereto

Article 6. The Seller shall not be responsible for loss, damages or delays in delivery of any materials occasioned by the transportation company, but agrees to render to the Buyer every reasonable assistance in the collection from the transportation company of any claim growing out of the above causes. The Seller shall not be responsible for any delays in the delivery of any material under this contract resulting from fires, strikes, lockouts, or any other cause beyond his reasonable control

Loss in Transit, Strikes, Fire, Etc

Article 7. The sum to be paid by the Buyer to the Seller for the work and material covered by this contract is

The Buyer shall pay the freight charges on said material to the point to which it is to be consigned, but, on presentation to the Seller of the receipted original freight bills, the Buyer shall receive credit on said purchase price for the amount of same, but such credits shall not extend to any Federal or other tax on materials, shipments, or freight bills. The moneys to be paid by the Buyer to the Seller are to be paid as follows: Shipments or deliveries will be invoiced at their approximate value and per cent. of such charges are to be paid at within days of the date of such invoices, and final payment shall be made at within days after the Seller's completion of the work included in this contract.

Contract Price, Terms, Freight Credits

Article 8. No [illegible] under this contract except final payment, shall be conclusive evidence of the performance of this contract, and no payment shall be construed to be an acceptance of defective work or improper materials

Article 9. The Buyer reserves the right to make such changes in, additions to, or deductions from the work or material included in this contract occasioned by alterations or changes in the original plans and specifications. Such changes occasioning additions to or deductions from the above named purchase price shall be made at fair valuations therefor. No changes or alterations in work once cut, in process of manufacture or completed, can be made, except at the expense of the Buyer for loss of labor and material.

Changes in Work

Article 10. The Buyer shall, during the progress of the work, maintain insurance, or see that insurance is maintained on the same against loss or damage by fire, the policies to cover all work incorporated in the building, and all material for same in or about the premises or elsewhere in the possession or under the control of the Buyer and to be made payable to the parties as their interests may appear

Insurance

Article 11. In the event that the Buyer shall store or install any of the millwork covered by this agreement, in the building, prior to the time that the interior of said building shall become and remain thoroughly dry, or shall permit said millwork to be otherwise exposed to the weather or to dampness, the Seller shall be relieved of all liability for defects that may thereafter develop in said millwork.

Improper Exposure

Article 12. In case the parties to this contract fail to agree in relation to any matters in dispute under this contract then the matter shall be referred to a Board of Arbitrators, to consist of one person selected by each party to this contract, these two to select a third. The decision of any two of this Board shall be final and binding on both parties hereto. Each party shall pay one-half of the expense of such reference. Should either party fail or refuse for a period of five (5) days after written demand has been served on him for an arbitration, to appoint an arbitrator, or submit the matter in controversy to arbitration, then and in that case, he shall forfeit and waive his contentions in any matters under controversy.

Arbitration

The said parties for themselves, their heirs, successors, executors, administrators and assigns do hereby agree to the full performance of the covenants herein contained

IN WITNESS WHEREOF, The parties to these presents have hereunto set their hands the day and year first above write.

Seller's Name

By

Buyer's Name

By

Uniform millwork agreement as finally adopted

Uniform Millwork Contract Now Available

Adoption of Standard Form Means Much to Millwork Industry—Interests of Buyer and Seller Fully Protected—Should Tend to Eliminate Unfair Competition

The Uniform Millwork Agreement adopted by the Millwork Cost Bureau, at the recent annual meeting, has been redrafted and is now ready for general distribution. Because of the fact that the use of this standard agreement form by woodworkers in general will tend to stabilize the buying of millwork and will thus work out to the benefit of the whole industry, it has been decided to make this form available to all operations of millwork plants, regardless of whether or not they are members of the Millwork Cost Bureau. In taking this step the Bureau is deserving of the thanks of the entire industry.

In presenting this form, which is shown herewith, to the industry, the Millwork Cost Bureau gives the following outline of the changes which have been made:

"Acting upon suggestions received from members since the distribution of the Uniform Millwork Contract on May 18, the original form has been somewhat revised. The instrument was rewritten under the direction of legal counsel and, as it now stands, meets, in a constructive way, practically all criticisms that were offered.

Important Clause Added

"The more important revisions are as follows: Several new clauses have been inserted for the protection of the Seller in such cases where additional drawings, specifications or explanations are furnished after the job has been let—see Article 1. A clause has been inserted to protect the Seller against improper exposure of the finished millwork after delivery has been made to the Buyer—see Article 2. The arbitration clause has been revised to apply only to matters in dispute under the contract—see Article 12. There are several other revisions of a minor nature, but the foregoing are the more important ones.

"Much time has been devoted to perfecting the

contract, and it now devolves upon the membership to put it into general use. It will apply with equal force in any territory and there is no logical reason for any manufacturer to refuse to adipt it. An adequate supply of the forms is carried in stock at this office and may be purchased at the rate of $2.50 per hundred.

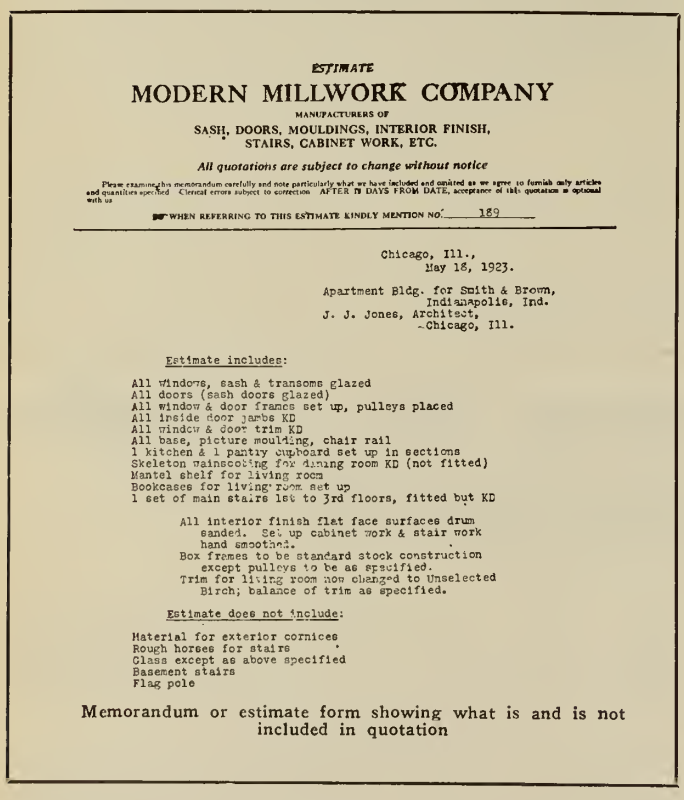
"Those members who wish to add an individual touch may have their name, address, etc., inserted. We have arranged with our printers to keep several sets of metal standing for that purpose. The prices for contracts so printed are as follows:

100 forms	$15.00
200 forms	18.00
300 forms	21.25
400 forms	24.50
500 forms	27.50
1000 forms	43.75

"These prices include the insertion of the Seller's name and address wherever blank lines occur for that purpose, also the number of days and the per cent required in Articles 5 and 7.

Advantage to Entire Industry

The use of this uniform contract tends to protect both the buyer and the seller or manufacturer of millwork. The estimate or memorandum which accompanies the agreement and which becomes part of it, specifies clearly what is and what is not included in the contract. While this is eminently fair to both parties it works out to the advantage of the seller for it clearly defines what he is to deliver and prevents the buyer from unfair and exacting demands because "he thought such items were always included with the millwork."



ESTIMATE

MODERN MILLWORK COMPANY

MANUFACTURERS OF
SASH, DOORS, MOULDINGS, INTERIOR FINISH,
STAIRS, CABINET WORK, ETC.

All quotations are subject to change without notice

Please examine this memorandum carefully and note particularly what we have included and omitted as we agree to furnish only articles and quantities specified. Clerical errors subject to correction. AFTER 10 DAYS FROM DATE, acceptance of this quotation is optional with us

☞ WHEN REFERRING TO THIS ESTIMATE KINDLY MENTION NO. 189

Chicago, Ill.,
May 16, 1923.

Apartment Bldg. for Smith & Brown,
Indianapolis, Ind.
J. J. Jones, Architect,
Chicago, Ill.

Estimate includes:

All windows, sash & transoms glazed
All doors (sash doors glazed)
All window & door frames set up, pulleys placed
All inside door jambs KD
All window & door trim KD
All base, picture moulding, chair rail
1 kitchen & 1 pantry cupboard set up in sections
Skeleton wainscoting for dining room KD (not fitted)
Mantel shelf for living room
Bookcases for living room set up
1 set of main stairs 1st to 3rd floors, fitted but KD

All interior finish flat face surfaces drum sanded. Set up cabinet work & stair work hand smoothed.
Box frames to be standard stock construction except pulleys to be as specified.
Trim for living room now changed to Unselected Birch, balance of trim as specified.

Estimate does not include:

Material for exterior cornices
Rough horses for stairs
Glass except as above specified
Basement stairs
Flag pole

Memorandum or estimate form showing what is and is not included in quotation

Another important feature is that having to do with the definition of terms and the way in which payment is to be made as various parts of the order delivered. Here again while the terms are clearly defined yet both the buyer and the seller are adequately protected. In fact a perusal of the agreement will show that practically all phases of the contract are covered with a view to amply protecting both parties to the agreement. This is only as it should be for if either the buyer or the seller were favored at the expense of the other, such an agreement would not find favor with the party whose interests were not fairly considered. This agreement is so developed that it should find favor with both parties and as a result should rapidly come into general use.

Concerning the use of the Contract

The Agreement is made out in duplicate at the time order is given to the Seller (not at the time of quotation) the original being for the Seller's record and the duplicate for the Customer's record. A copy of the memorandum list or modified blanket bid is attached to both the Buyer's and Seller's copy.

Article 1. When the job is a local one, then the words "free on board cars consigned to" appearing in line 1, Article 1, are stricken out, but if it is a foreign job, then the words "delivered to the building site located at" are stricken out. When a firm of architects has been engaged to prepare the plans and specifications an "s" is added in the space provided at the end of line 8.

Article 3. If the Seller desires to take measurements, instead of having them supplied by the Buyer, then this article is canceled and a proper notation written in the blank space provided at the end of the article.

Articles 4 and 5. Any special conditions that might arise may be provided for in the blank spaces allowed for that purpose at the end of these articles.

Article 7. If the Seller wishes to provide for a cash discount, then a notation to that effect is inserted in the blank space occurring at the end of this article.

The adoption of the Uniform Millwork Agreement by the industry should tend to place the giving of quotations upon a comparable basis and should tend to stabilize competition. Further particulars with regard to the agreement itself or its use may be secured by addressing the Editor of the "Canadian Woodworker."

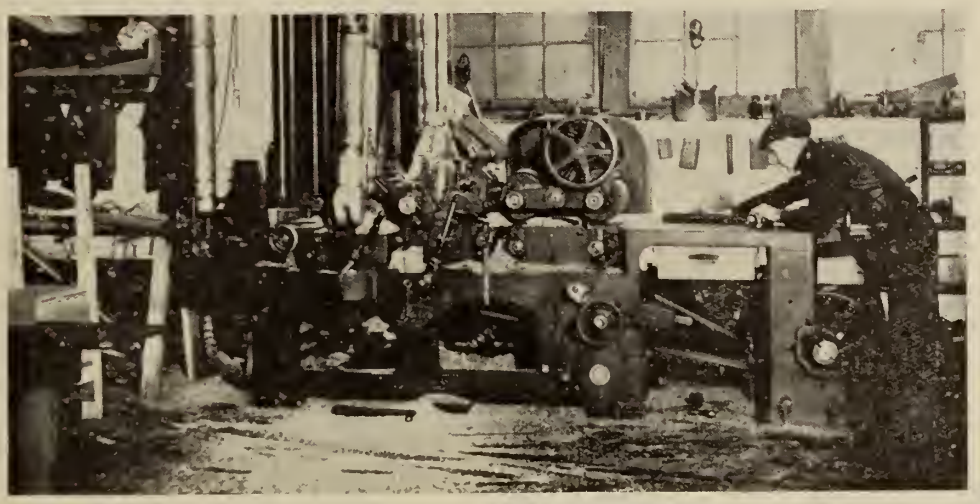
June Accident Record High

"My attention has just been called to the fact that June, 1923, stands out in the history of the Workmen's Compensation in Ontario, as the month in which the greatest number of accidents were reported to the Workmen's Compensation Board," writes J. C. Scofield of the Windsor Lumber Co. "The staggering number of accidents was 5,523, of which 35 were fatal. This means an average of over 200 for every working day of the month, or one for every thirty minutes, and calls for drastic action on the part of all employers.

"I have nothing before me to show what percentage of accidents occurred in planing mills, but if our rates are to be lowered at the end of 1923, accidents must be prevented and can be, if our plant owners will take the matter seriously by giving it proper supervision, carrying it to a point where the careless or indifferent worker is told to look for another job where he will not cost our Board and ourselves so much money.

If you have a number of joints to make and want to do them quickly it would be best to instal a straight line ripping machine.

What's Wrong in This Picture?



What constructive criticism can be made of operation as depicted here

Sometimes the omissions and weaknesses so often found in woodworking plants can be pointed out to better advantage pictorially than by the use of printed word alone. Here is a case in point. A glance at the accompanying illustration seems to indicate that everything pertaining to this operation is pretty much as it should be. The operation is running the rim mould for phonograph tops. The stock is cut to length before being fed through the sticker. The machine is of a modern type, connected to the shaving exhaust system and located in a well lighted section of the plant. Even the operator seems to be right on the job as he is bending every effort to keep the moulder filled with the short pieces that are going through. What improvements can be pointed out and what lesson can be learned from a study of this picture? What is your suggestion? Send it along before you overlook it. The replies received, omitting names, together with the suggestion the "Canadian Woodworker" has in view will be published in the September number. Watch for the next "Canadian Woodworker."

Studying Dimension Stock Requirements

Systematic Analysis of Requirements of Various Branches of Wood Using Industry—Growing Use of Dimension Stock is Movement Tending to Conserve our Timber Resources and Reduce Remanufacturing Costs

By .O. A. Benson*

In present practice wood in the different sizes and shapes required by the secondary wood-using industries in the manufacture of fabricated wooden articles is usually produced in the plants of these industries from various grades of lumber purchased for that purpose. With such methods great losses occur in edging, trimming, and saw kerf, and there is heavy additional expense of transportation of material and for the operation itself. The resulting material, in the form of cuttings, is usually termed small dimension stock. In best practice this dimension stock should usually be the finished product of the manufacturer or producer of lumber and dimension stock, and the raw material of the wood user or consumer.

Several years ago the U.S. Forest Service in its investigations became fully convinced that current practices of preparing stock for fabrication were fundamentally unsound. To a very large degree the secondary wood-using industries throughout the country were employing long wide lumber of standard grades in securing the small-size stock required. On the other hand, in the woods and in the sawmills there was an appalling waste of material which it was reasonable to suppose could be advantageously cut up into the small clear stock required by the

*Wood Technologist, Forest Products Laboratory, Madison, Wis.

consuming industry. The small dimension stock idea was not new. In fact it had been applied to a limited extent by many manufacturers and while in some cases it had worked out economically, in others it was not so successful. The chief difficulty was that there had never been a concerted effort made by lumber producers and consumers to work the problem out so that it would be of mutual advantage. While producers did not fully realize the requirements of the consumers, the latter, on the other hand, were not sufficiently familiar with the possibilities and limitations of the producer.

Scope of Dimension Stock Project

It was with these general ideas in mind that the Forest Service, through the Forest Products Laboratory, about two years ago began an intensive study of the small dimension stock problem. Added impetus was given to the work through the earnest co-operation of the Association of Wood Using Industries, an organization representing a great many of the large consumers of wood. Their support assured the laboratory of the assistance of manufacturers when the time came to make intensive investigations of fabricating methods.

Piles of dimension stock in yard of large wood-user

The intensive study then planned had the following general objects: (1) to ascertain the dimension stock requirements of all secondary wood-using industries; (2) to determine the most economical method of converting the log into the product required by these industries; (3) to bring about the more extensive manufacture and marketing of clear, properly-sized small dimension stock and more universal use of ready-cut stock by all industries; and (4) to standardize and stabilize small dimension stock requirements.

Requirements of Chair Industry Studied

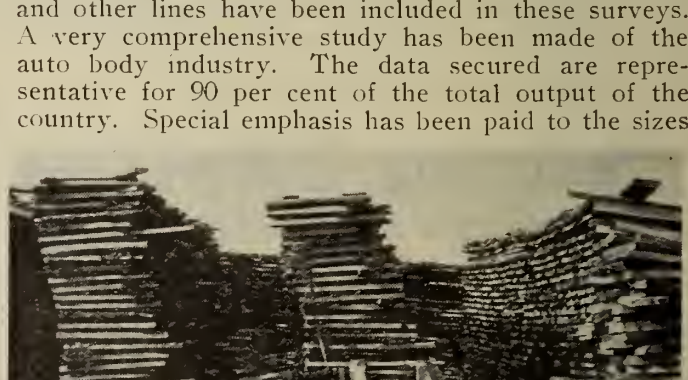
Extensive surveys indicated that the most logical place to initiate these studies was in the chair industry where a major portion of the stock is reduced to final form in short and narrow dimensions. A year was devoted to intensive studies in chair plants in the big producing centers throughout the United States. As a result of these studies a report was prepared which was published and is being distributed by the Association of Wood Using Industries. Many interesting phases concerning the methods of operation of chair factories were brought out and for any one interested in the general subject of dimension stock, the book should be of much interest and value. The general principles apply quite broadly to the secondary wood-using industries as a whole, even though the report is based on chair factory practice alone.

Upon the completion of the chair studies similar studies were initiated in wood-turning plants. Dimension stock can be used to very good advantage for many classes of turnings and it is already quite common practice for wood turners to buy their raw materials in the form of ready-cut squares or flat stock. For some classes of hickory handles where the prerequisites with reference to direction of grain, density of material, etc., are very exacting, it is not possible to use dimension stock with the assurance of being able to produce articles of highest grade. For other classes of turnings, however, such as dowels, buttons, knobs, and broom handles, ready-cut squares can be used with entire satisfaction.

The studies in the chair and turning plants are but two of a long series of investigations. For each of the major wood-using industries studies are planned which will give information on methods of operation, incidental wastes and costs, etc.

Study of Grading of Hardwood Lumber

In conjunction with the dimension stock studies, there is being conducted at the present time a study of the grading of hardwood lumber. These two studies interlock to such a degree that it is practically impossible to separate one from the other. A very important phase of both is the determination of wood requirements of the secondary wood-using industries. It is necessary to know, in a large measure, what sizes are used by the industry and the kinds and qualities of wood required before intelligent conclusions can be drawn as to the best methods of meeting their requirements. Thus far the general furniture industry has been covered, with the exception of the Lake States region, the middle Atlantic, and northeastern states. Living, dining room, and bedroom furniture, commercial fixtures, office furniture, kitchen cabinets, refrigerators, school room furniture, and other lines have been included in these surveys. A very comprehensive study has been made of the auto body industry. The data secured are representative for 90 per cent of the total output of the country. Special emphasis has been paid to the sizes of parts for the different types of bodies, the kinds and grades of lumber used as raw material and the possibilities for the substitution of cheaper yet serviceable woods for the higher priced species of which the supply is rapidly diminishing. Other consuming industries are those manufacturing railway cars,



Mill cuttings air drying preparatory to being made into dimension stock

hardwood flooring, vehicle, implement, and boxes and crates.

Another research which concerns both the dimension stock and hardwood grading projects is a study of the grades of lumber as produced by sawmills at the present time. This information is necessary to determine what modifications or changes, if any, might be made in the present rules for grading and inspection of hardwood lumber in order more efficiently to meet the limitations of manufacture and distribution, and the requirements of consumers.

Studies in dimension stock mills are contemplated. In some cases the present practice is to work up logs or bolts directly into the sizes of stock required by the secondary wood-using industries. A notable example of this practice is the mill, common in the New England States, which cuts paper birch bars suitable for working directly into spools and bobbins. This method of production has been carried further, perhaps, in the spool industry than in any other. It is probable that for this industry it is the most economical way to convert the log into the final product.

Dimension Stock a Conservation Movement

Naturally the Forest Service is interested in the dimension stock idea, largely because it offers a means of more complete utilization of the forest crop. Much material necessarily left in the woods under present methods of utilization can be profitably worked up into usable products. In the sawmill, slabs, edgings, and trimmings can be worked up to satisfy the small stock needs of many of the consumers. It has been demonstrated also that low grade lumber, at present disposed of only at a loss, can be reduced to clear small stock and then marketed in that form, not only at a fair margin of profit to the lumber producer, but at the same time supplying consumers with a class of stock advantageous for their purpose.

The adoption of the dimension stock idea is an economic problem which must adjust itself sooner or later. Fundamentally the principle is sound. It means conservation of material, saving of transportation charges, and a saving of labor. As custom has so much to do with the retention of present methods, it is not to be expected that immediate changes will universally occur. Present inefficient methods will pass slowly. There is naturally a justifiable hesitancy in adopting methods which to many users are entirely new and untried.

How One Firm Protects Its Plant

Fire protection is of prime importance in woodworking plants but fire prevention is equally important. The best way to guard against the fire hazards in this field is to take every precaution to prevent fires from getting a start.

This is strikingly illustrated in the case of the Windsor Lumber Co., Limited, Windsor, Ont., who, not being content with an efficiently organized plant fire department and the equipment shown in the accompanying photo, make every effort to keep their plant and yards clean and free from litter and in other ways do what they can to eliminate fire hazards. The hose shown is attached to the hydrant at all times and can be run out at a moment's notice. Chief De Fields of the Windsor fire department has had charge of the organization and training of the local fire fire fighting force. In addition to ensuring that this force is maintained on an efficient footing Chief De Fields lays great stress on prevention work of all kinds.

At the best many fire risks are to be found around woodworking factories but such hazards are multiplied many times when plant and yard are not kept clean and orderly and when dust and shavings are permitted to accumulate on the floors, around the buildings, and in little used out of the way places.

Each year the fire loss in the woodworking field reaches comparatively large figures but the most regrettable feature is that a large proportion of this loss would not have occurred had proper precautionary steps been taken. Is your plant going to be one of those that will fall a prey to the flames during the next twelve months? The answer rests largely upon your own initiative and efforts.

Fire-fighting equiment recently installed at plant of Windsor Lumber Co. Ltd., Windsor, Ont. The factory and yards are also kept clean and orderly at all times.

The Shaper as an Aid to Production

Lower Costs and Increased Output Secured Through use of Modern High Speed Shapers—Adopted Extensively in Large Body Plants Where Volume Production of Accurate Parts is Required—Suggestions for Securing Satisfactory Results

By Alec. Williams

The wood shaper is without doubt one of the most important machines in a woodworking plant. One would be perfectly safe in saying this machine has a greater variety of work to its credit than any other piece of equipment to be found in most factories. To it can be attributed in large measure the development in furniture design over the last few years, in that the designer has been able to have his ideas transferred to wood and worked out in thoroughly workmanlike manner.

The wealthy still endeavor to secure exclusive furniture by patronizing some of the manufacturers who cater to this class of trade but even these craftsmen usually have shops that are fairly well equipped with machinery, practically none of them are without saws, bandsaws, shapers, planers and sanders. I am acquainted with several furniture workers in Toronto who have quite well equipped shops. Their machinery is not always as modern as that demanded by the large factory seeking top notch production but hand work is very limited even in these shops catering to individual orders from exclusive buyers.

Transferring Design From Drawings

The method of transferring the drawings of the designer to patterns, shaper forms, etc., for production purposes is similar in nearly all of the large factories. First of all sample suites or pieces are constructed by the sample making department. These are inspected with critical eyes to see if any improvements can be made before production in quantities is commenced. Patterns are made for all the bandsawed parts and forms are prepared for all work requiring shaping. As little time as possible is spent on the first patterns for the samples, the reason being that after the sample is made up the piece may be abandoned for some reason or other. For instance the travellers may issue its death warrant by pointing out to the management that the piece has little chance of being accepted by the trade.

All patterns for bandsawing and for shaper forms are traced off the draftsman's full size drawing. There are different methods of doing this. One is to use tracing paper similar to that on which architects usually furnish the details for a building. Another method and one that is perhaps more practical is to use ordinary brown drawing paper the same as the draftsman puts his drawings on. Lay a piece of this paper over the part of the drawing you want to trace and rub it over with a rag soaked in gasoline. This will make the paper transparent and the tracing can be made easily.

This drawing paper makes a better pattern than the tissue paper. It can be used to mark a thin wood pattern which can be touched up a little with a rasp to give it a good outline. The tissue paper patterns are harder to handle. They have to be glued on or shellaced on to a thin piece of wood for the bandsawing operation and it is a difficult job to keep the tissue from wrinkling and distorting in shape when it is glued on the wood. One thing that might be added in reference to the thick paper and gasoline method is that the tracer must be a fast worker because the gasoline dries or evaporates rapidly and as soon as it does this the paper loses its transparency.

Advantageous to Work on Forms

In a modern factory it is remarkable the amount of stock that is shaped to form that would formerly have been bandsawed before shaping. The high speed shapers on the market now will take an amount of wood at one cut that would startle some of the old time shaper men if they could see the work done.

A good many plants have found it necessary to dispense with their old shaper men and hire new ones when they introduce the present high speed shapers. The older men were not fast enough to get the best results and secure full production out of the new machines. Some of the old shaper hands soon acquired the speed but many of them were not able or willing to make the grade.

One big feature of shaping stock to forms is that it is possible to secure a uniformity that was impossible by bandsawing and sanding on spindle sanders. The shaper makes every piece of stock exactly the same if good forms are used, and it pays to spend a little time on form making. It requires a first class mechanic to make shaper forms. He must be thoroughly conversant with a shaper and know just exactly what it will do.

I recall an instance where a prominent Ontario furniture manufacturer, owner of several plants, instructed his form maker to get out a shaper form making a certain style of leg for a dining chair, a cheap style of foot to be exact. The form maker did some figuring and rendered a verdict that it couldn't be done on a shaper. Just to show that it could be done the manufacturer took off his coat and made the form himself. He had run a shaper hundreds of times and knew what could be done on the machine.

Used Extensively in Body Plants

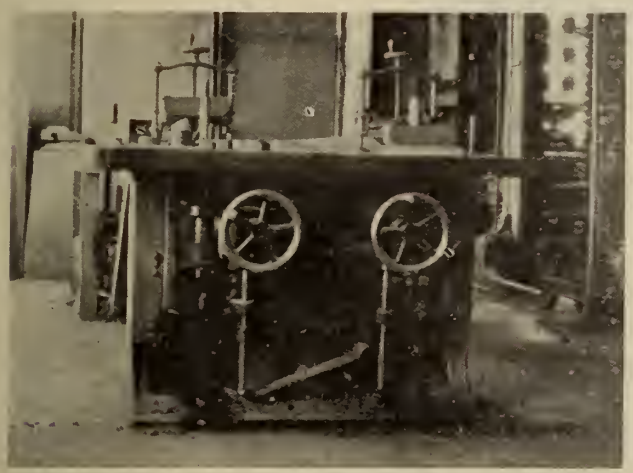
I think perhaps the use of shaper forms has been carried to greater lengths in the manufacture of automobile bodies than in any other line of woodwork. Practically every piece of wood used in a body is shaped. In addition to the standard vertical two spindle shaper known to every woodworker the automobile body plants use special shapers for doors and sills. The General Motors Corporation have eleven high speed ball bearing shapers in their body plant in Oshawa, Ont. In addition to this formidable battery of two spindle shapers they have both door and sill shapers.

Much smoother work is obtainable on the modern high speed shaper than could be produced by the babbit bearing shapers of former days. Babbit bearing shapers have a spindle speed of form 3500 r.p.m. to 4000 r.p.m. Some operators run them faster than that but those are the speeds at which the great majority of babbit bearing shapers run. The modern

high speed shaper runs about 7000 to 8000 r.p.m. and considerably higher in some instances, particularly on the small shapers built specially for brush work. This speed makes it possible to produce a class of work that for smoothness could not be equalled on a babbit bearing machine. This smoothness means that considerable less sanding is necessary to prepare the work for the finisher. From the standpoint of capacity the hgh speed shaper is much in advance of the babbit bearing shaper. This gives two advantages that can be estimated by figuring the saving on the amount of shaper work a plant has to do, and furniture factories are largely dependent on the shaper.

Sanding Costs Reduced

The high speed, giving as it does so many knife cuts per minute produces fine smooth work. The reason for this is obvious. The knife cuts are closer together and if the knives are properly sharpened and balanced the marks are almost imperceptible. The smoothness can thus be equally appreciated. A demonstration of this came to my attention recently. The wooden drawer pulls on office desks are scooped out on the under side for the user of the desk to get



Work often done on bandsaw and other machines can be handled to advantage on modern high speed shaper

a grip with his fingers. These scoops were made on a high speed ball bearing shaper and were not touched afterwards with sandpaper. The ends of the cut were against the wood and one could not detect the slightest sign of roughness. With a slower speed shaper it would be impossible to produce work like that because the knives would almost certainly roughen up the end wood even if they did not tear it out.

The operation of the shaper calls for a good mechanic. In addition to skill the operator must possess good steady nerves. Many a man has received a nasty gash on a shaper through losing his nerve when the knife kicked against a particularly rough cut and letting go of the stock where a more steady man would have held on to it and continued to shove it past the cutters. The same thing holds good in the operation of a circular saw. If the saw shows a tendency to throw the stock back and the operator loses his nerve and lets go of it, it will come back so fast that it will seriously injure him unless he is fortunate enough to be able to quickly step aside.

Some operators prefer the spindles of a shaper to run out, that is, they run towards the outside edges of the table or away from each other while other men will not work on a shaper unless the spindles revolve in the opposite direction, that is towards each other. The men who prefer the spindles running out claim that if they throw the piece of stock being cut they throw it away from the other head whereas a shaper with the spindles running in will throw the piece of material into the knives on the other head, thus endangering the hands of the operator. The majority of shaper men apparently prefer shaper spindles running out. They seem to be accustomed to operating them that way and the spindles running out seem to be better adapted to the classes of work done.

Rare Woods Successfully Imitated

During the war the Germans developed to an unheard of degree the art of commercial synthesis. Almost every commodity of general utility and a great many luxuries which the British blockade refused to the Germans was reproduced synthetically by ingenious manufacturers. Synthetic food, synthetic clothing, synthetic medicine, and synthetic drink were the order of the day throughout the land. Everything from shoes to hair tonic was "ersatz"—imitation.

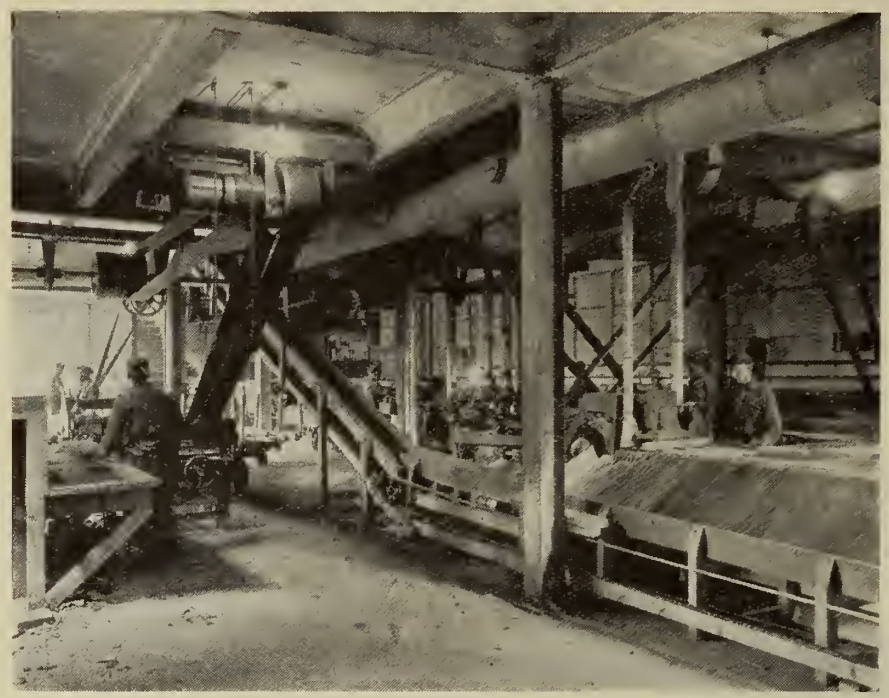
Many of the "ersatz" substitutions developed during the war by German ingenuity and industry proved almost as good and considerably cheaper than the genuine originals after which they were modeled. The "ersatz" commodity has therefore persisted as a factor in peace-time commerce and German manufacturers are continuing to devise new substitutes which, at lower cost, will satisfactorily replace the more expensive genuine products.

One of the "ersatz" industries is the production of cheap imitations of rare and expensive woods. The method employed involves the tinting of live trees to reproduce the exact shades of genuine mahogany, rosewood, teak and ebony, for the use of cabinetmakers. The roots of the trees selected for this purpose are perforated and rubber tubes inserted in the punctures. Especially prepared aniline dyes are then forced through the tubes and are sucked up through the roots, following the current of the flowing sap until the entire tree—trunk, branches, twigs, and even the leaves—is saturated with the coloring matter. A few days is sufficient to dye a tree three or four feet in diameter at the base and fifty feet high.

The dyeing process kills the tree, but that is of no consequence, since lumber and not landscape-gardening effects, is the object of the inoculation. When the tree is cut down and sawed up it furnishes a very passable and entirely permanent imitation of rare wood worth three or four times the cost of the reproduction.

Appoint Canadian Sales Manager

The Reese, Sheriff Lumber Company, Willamsport, Pa., recently appointed a Canadian sales manager in the person of G. H. Johnson, of London, Ont. In this connection a sales office is being opened at London and a complete line of American and Canadian woods, both hardwood and softwood, will be offered to the trade. The output of a number of Canadian mills has been secured which together with their American stocks will enable them to supply the total requirements of woodworking plants. Mr. Johnson is a lumberman of wide experience and is well and favorably known to the Canadian trade having been calling on them for a number of years.



View in Montreal hardwood flooring plant showing conveyor which carries strips of flooring to upper floor.

Eastern Flooring Company Busy

The demand for the products of the Montreal Hardwood Flooring Limited, Quebec, which was organized a few months ago, has been such that they are considering adding to their plant by constructing a new office and a warehouse capable of storing about one million feet of flooring.

The capacity of the plant as it stands today is from 350,000 to 400,000' a month. This consists of birch flooring principally although maple, beach and oak flooring is turned out and carried in stock. The dry kilns, which adjoin the mill, are of the progressive type and modern in design. The stock is dried in from six to seven days and the capacity of the drying equipment being 215,000 ft. every seven days.

After leaving the kilns the lumber is placed on a chain conveyor which carries it to a gang rip saw. Here it is ripped into the required widths, five or six strips being cut at one operation. From here the strips are moved on trucks to the hardwood flooring machine, which is a Yates high speed milling machine. With this equipment the stock is fed on edge, the rapidly revolving cutters of the milling head giving it a smooth finish entirely free from knife marks.

As most wood users know the price of hardwoods have advanced considerably, due in no small degree to the increase of demand for the better grades. This has resulted in lumber manufacturers turning their attention to the narrower and rougher stock. To produce high grade flooring from this lower grade stock requires the most modern equipment, operated according to the most advanced ideas. This is what this company have attempted to accomplish in the equipping and operating of their plant.

After leaving the hardwood flooring machine the stock goes to the trim saw and from there is carried on conveyors to the end matchers. The flooring is then lifted by a belt conveyor to the second storey where it is graded and tied in bundles.

The manager of this new company is J. H. Bernard who was in charge of the Montreal branch of the Seaman Kent Company for many years.

Some Uses of Basswood

An extremely large number of articles of woodenware are commonly made of basswood. Important among these are kitchen utensils, such as bread boards and boards for cutting slaw and other vegetables; also such articles as bowls and candlesticks, which are turned on the lathe and to which carving may be added. Cloth boards on which goods are wound, lap boards, and cutting boards of various kinds are commonly of basswood, because it is white, light in weight, and not so readily split as many other light woods. Small, clear pieces of waste basswood are often worked into such articles as fan handles. Wooden novelties of many kinds, often sold as souvenirs, are made of basswood because of its good working qualities. Checkers and dominoes are commonly of this wood, because it shows painting to excellent advantage. Basswood is the favorite wood for pyrography because of its whiteness, although little is now used in this way. Porch shades, snow shovels, and ladders are other articles in which basswood is valued because of its light weight. Because it shows printing and writing well, it is made into barbers' checks, and labels attached to hay bales on which the weight is written.

It depends entirely upon your drying plant whether you cut your stuff to exact lengths before you dry it.

What do you prefer, garnet or flint for your sanding wheel. Garnet seems to last longest on most hard woods, but flint seems to cut freer than garnet.

Are Frequent Tests Essential?

Good Drying Demands that Condition of Stock be Watched Closely—Information Gained Through Tests of Real Assistance to Operator—Should Ascertain Condition of Interior of Cars Before Removing Stock from Kiln

By A. W. Lynn

When one pauses and considers it is not strange that considerable stress should be laid on the importance of accurate tests to determine both the average moisture content of the stock during drying and before removing it from the kiln and the moisture distribution in the piece. Lumber is put in the kiln, in the first place, to be dried uniformly to some predetermined percentage of moisture content and it follows that it should be permitted to remain in the kiln until that has been accomplished, almost regardless of the time factor, something which can only be determined through frequent tests.

It cannot be emphasized too strongly that in operating a kiln, rule of thumb methods should not be followed, other than in a general way, but that the operator should be guided almost entirely by the results of his tests and that these tests should be made often enough to ensure that at all times he is kept fully informed as to the condition of the lumber in the kilns. This not only means frequent tests but that samples should be taken from various sections of the kiln and from different parts of each car.

Intelligent Control Required

Some may ask the reason for such care and accuracy in determining the condition of the lumber as the drying progresses. If one may judge, many operators give little attention to the stock itself being content to allow the drying to proceed for a certain number of days and if at the end of that period a test shows that the moisture content has been reduced somewhere near the desired point, the charge is taken out and another lot run into the kiln. Such a procedure can hardly be dignified by applying the term "kiln operating" and the result secured in such a haphazard manner can undoubtedly be improved.

In order that the moisture is removed rapidly and without injuring the stock it is essential that the condition of the stock be watched carefully and the drying conditions regulated accordingly. This can only be done if frequent tests are made. Otherwise the condition of the stock is merely guessed at, and hit or miss drying results. Further than that, by watching the moisture content of the centre and surface sections of the various samples taken it is an easy matter to follow the rate of drying in comparison to the rate of transfusion. If the difference in moisture content betwen the centre and surface sections is not very marked, the drying may safely be speeded up, while, on the other hand, too great a difference indicates that the rate of drying is in excess of the rate of tranfusion and if not corrected, if the E.M.C. of kiln condition is not raised, checking and casehardening is sure to result. There is an old saying that applies very aptly to the drying operation: "An ounce of prevention is worth a pound of cure." It is not a good policy to wait until the stock is checked and casehardened before increasing the humidity but rather it is far better and far more economical to follow the rate of drying through the making of frequent tests, and regulate conditions according to the result of the tests.

Uniform Drying Desirable

Another phase that should be watched closely through the tests that are made is that the stock is being dried evenly and uniformly. This is most important towards the end of the run. A test of a sample taken from the outside of a car might show the desired moisture content while the stock in other sections of the same car or in other sections of the kiln may contain ten or twelve per cent. of moisture. It is just this condition that is responsible for much of the trouble so often experienced from open joints and kindred evils. The one piece tested may have been dry enough but that does not mean that all the stock in the kiln is uniformly dry. It is absolutely essential that tests be made on samples taken from different parts of the kiln, some from near the centre of one of the cars, and that the drying be continued until the stock in the slowest drying section is reduced to the desired degree of dryness.

This phase of the work, that is continuing the drying operation until the stock in all sections of the kiln is dry, is important yet is often overlooked. It is not unusual to find in the centre of a car, boards containing a high percentage of moisture. When such material is worked up it may find its way into a large number of finished articles. For this reason a few wet boards in the centre of a car of lumber may cause a lot of trouble and expense. Thus it will be seen that the uniformity with which the drying is conducted is an important factor. Many a dollar spent in repairs could be charged to uneven drying in the kiln and indirectly to the operator who should have detected this fault and corrected it by continuing the drying period for a day or two longer.

An Interesting Phase of the Work

While a program of this kind, calling for so many tests, may seem a bit elaborate to many operators, yet it is the only basis upon which drying can be successfully and intelligently conducted. Any other method takes too much for granted or depends to too great an extent upon guess work to be relied upon.

From the viewpoint of the operator the making of frequent tests may involve a little additional work but this will be more than offset by the improved results which will be secured. In addition by taking a greater interest in the drying of the stock and by attempting to operate the kiln in an intelligent manner the kiln operator will derive considerable more pleasure and satisfaction from his daily task.

The trouble with the ordinary clamps if they are used to joint a number of pieces together, the tendency is for them to buckle. What is needed is a short bar on the top to hold them down.

Abbreviations Common in Woodworking

Complete List of Abbreviations Frequently Used in Woodworking and Lumbering Fields—Convenient to Have on Hand for Quick Reference—Some new ones Suggested

The Forest Products Laboratory of the U. S. Forest Service recommends as standard the following abbreviations of terms used by the lumber industry. Most of the forms given correspond to those already in common use. In a few cases new abbreviations have been suggested where the old forms overlapped or were misleading.

AD Air-dried
a. l. All lengths
av. Average
av. w. Average width
av. l. Average length
a. w. All widths
B1S Beaded one side
B2S Beaded two sides
BBS Box bark strips
bd. Board
bdl. Bundle
bdl. bk. s. Bundle bark strips
Bev. Bevelled
B/L Bill of lading
b. m. Board (foot) measure
Btr. Better. Also Bet.
c. i. f. Cost, insurance and freight
c. i. f. e. Cost, insurance, freight, and exchange.
Clg. Ceiling. Also C/G and Ceil.
Clr. Clear. Also Cl.
Com. Common
Coop. Cooperage (stock
CM Centre matched; i. e., the tongue and groove joints are worked along the centre of the edges of the piece.
Csg. Casting. Also C/S
Ctg. Crating
cu. ft. Cubic foot
Cust. Custom (sawed)
D&CM Dressed (one or two sides) and centre matched.
D&H Dressed and headed; i.e., dressed one or two sides and worked to tongue and groove joints on both the edges and the ends.
D&M Dressed and matched; i.e., dressed one or two sides and tongued and grooved on the edges. The match may be centre of standard.
D&SM Dressed (one or two sides), standard matched.
D2S&CM Dressed two sides, centre matched.
D2S&M Dressed two sides and (centre or standard) matched.
D2S&SM Dressed two sides and standard matched.
Dim. Dimension.
D.S. Drop siding. Also D/S. Synonymous with cove siding (C. S.), novelty siding (N.S. and Nov. Sdg.), and German siding (G. S.).
E Edge. Also Ed. and Edg.
E&CB1S Edge and centre bead one side; i.e., surfaced one or two sides and with a longtudinal edge and centre bead on a surfaced face. Also B&CB1S.
E&CB2S Edge and centre bead two sides; i.e., all four sides surfaced and with a longitudinal edge and centre bead on the two faces. Also B&CB2S.
ECM Ends centre matched.
E&CV1S Edge and centre V one side. Also V&CV1S.
E&CV2S Edge and centre V two sides. Also V&CV2S.
EM End matched—either centre or standard.
ESM Ends standard matched.
exp. Export (lumber or timber).
f. bk. Flat back.
FAS Firsts and Seconds—a combined grade of the two upper grades of hardwoods.
f. a. s. Vessel (named port). Free along side vessel at a named port.
Fcty. Factory (lumber). Also Fact.
F. G. Flat grain. Synonymous with slash grain (S. G. and plain sawed (P. S.).
Flg. Flooring. Also F/G.
f. o. b. (named point). Free on board at a named shipping point.
f. o. k. Free of knots.
f. o. w. First open water.
Frm. Framing.
ft. Foot or feet.
ft. b. m. Feet board measure.
ft. s. m. Feet surface measure.
G. R. Grooved roofing.
h. bk. Hollow back.
Hdl. Handle (stock).
hdwd. Hardwood.
Hrt. Heart.
Hrtwd. Heartwood.
1s&2s Ones and twos,—a combined grade of the hardwood grades of Firsts and Seconds.
Impl. Implement (stock).
in. Inch or inches. Also two accent marks (").
KD Kiln-dried. Also K/D.
k. d. Knocked down.
lbr. Lumber.
l. c. l. Less carload lots.
lgth. Length.
lgr. Longer.
lin. ft. Lineal foot; i. e., 12 inches.
Lng. Lining.
LR Log run.
LR, MCO. Log run, mill culls out.
Lth. Lath.
M Thousand.
M b. m. Thousand (feet) board measure.
MCO Mill culls out.
Merch. Merchantable.
m. l. Mixed lengths.
Mldg. Molding.
MR Mill run.
M s. m. Thousand (feet) surface measure.
m. w. Mixed widths.
No. Number.
Ord. Order.
P. Planed—used synonymously with dressed and surfaced as P2S&M, meaning planed two sides and matched.
Pat. Pattern.
Pky. Pecky.
Pn. Partition. Also Part'n.

(Continued on page 86)

Fuel Value of Wood Waste Over-estimated

Manufacturers of wooden products are apt to overestimate the fuel value of the lumber wasted in cutting-up operations. The argument is frequently advanced that a supply of waste on hand at all times permits large savings in coal, and that the purchase of ready-cut wood stock would not be economical because it would leave the manufacturer no waste to use as fuel for operating the power or heating plant.

The false logic of such an argument is apparent when consideration is given to the fact that the material which is thus being used for fuel is high-grade lumber which is worth pound for pound from three to ten times as much as coal. The heating value of this material is considerably lower than that of coal. It is estimated, and the figure is high enough to be conservative, that pound for pound the fuel value of the waste from lumber is not more than 62 per cent. of that of coal.

A thousand board feet, or approximately 3800 pounds, of waste from oak lumber will have a fuel value equivalent to that of 2360 pounds of coal. If coal is worth $6.50 a ton, the fuel vale of a thousand board feet of oak would be $7.66. But the oak lumber from which the waste cuttings came probably cost the manufacturer $62.50 per thousand board feet. The cost of the oak waste as fuel, then, is about eight times that of coal, and the handling charge in the furnace room is greater for wood waste than for coal.

The fuel value of waste is not usually great enough to offset the freight charges on it from mill to factory. It would seem a logical practice, then, on this ground alone, for a manufacturer to use dimension stock and try to reduce his cutting-up waste. The unavoidable waste which always occurs in the manufacture of wooden products usually can be utilized to best advantage as fuel.—U.S. Forest Product Laboratory.

The blower used for removing the chips should not be utilized for taking short blocks to the stokehold. Boys caught at this game should be severely cautioned as to the danger of a vane breaking off the fan.

When your mortising chain is causing trouble by not cutting perfect mortises, remember that the chain works on the same principle as a saw. When the teeth are not perfectly level the chain tends to run on the highest side.

How we Nail Our Wood Boxes

Excerpts from Bulletin Issued by Research Laboratory of the Chicago Mill and Lumber Co., Chicago—Ready Reference Tables of Interest to Box Makers

Nails not only serve to hold the parts together, but provide rigidity. It is obvious that too few nails or to small nails do not provide strength commensurate with that of the boards; likewise too large nails create splits when subjected to stresses or strains. Splits do not hold nails firmly.

Proper nailing of boxes demands the right kind of nails, the right size, and the right number. Necessarily there are some exceptions to the generally accepted rules, but these exceptions are comparatively few and need cause no concern to the average user of wooden boxes.

Kind of Nails

Cement coated nails develop, on an average, from 10 to 30 per cent. more resistance to pulling from the wood than do uncoated nails whatever smooth or barbed.

Uncoated nails are rarely used by box manufacturers, even in machine driving, except for cleating ends. Powdered soap-stone is generally mixed with cement coated nails in machine driving in order to facilitate their use. The reason that uncoated nails may be used in end cleating is because the nails are clinched.

Some box makers use a lighter gauge nail—called Special Box Nails—when nailing up boxes made of White Pine and similar woods, but the hazard of these nails bending in machine driving, and the danger of weaving which causes shearing of these light gauge nails, makes their value questionable.

The table shown in the insert in this page is based on the use of cement-coated nails—sinkers and coolers—and gives the number of nails per keg, the advance in cost over the base price, and the length and gauge commonly used in box making.

Standard Cement Coated Nails

Size	No. Per Keg	Advance Over Base	Length	Gauge
2d	85700	$1.45	1"	16
3d	54300	1.15	1⅛"	15½
4d	29800	.80	1⅜"	14
5d	25500	.75	1⅝"	13½
6d	17900	.60	1⅞"	13
7d	15300	.55	2⅛"	12½
8d	10100	.30	2⅜"	11½
9d	8900	.30	2⅝"	11½

What Determines the Size of the Nail

The size of the nail to be used is governed by the species of wood and thickness of the boards. All the species of woods commonly used for box making purposes have been classed in four groups. This grouping takes a number of factors into consideration, the principal ones being the mechanical or strength properties of the woods and their ability to take and hold nails.

According to the accepted formula, with such modifications as have been found necessary in practice, the proper size of nail to use for these different groups of woods and for the different combination of thicknesses of ends (and cleats) and of the sides, tops and bottoms is set forth in the accompanying tables which are based on the following rule:

Space nails holding boards to end grain of ends 1¾ inches apart and space nails holding boards to side grain of ends 2 inches apart when nails are 6d or less. Increase spacing ¼ inch for each penny over 6.

The nails that hold tops and bottoms to sides, are

Use Nails of Size Indicated, When Species of Wood Holding Points of Nails is:—	Thickness of Ends or Cleats to Which Sides, Tops and Bottoms Are Nailed					
	7/8"	13/16"	5/8"	9/16"	1/2"	7/16"
	Sides, Tops, Bottoms	Sides, Tops, Bottoms	Sides, Tops, Bottoms	Sides, Tops, Bottoms	Sides, Tops, Bottoms	Sides, Tops, Bottoms
	7/8" 11/16" 5/8" 1/2" 3/8"	11/16" 5/8" 1/2" 3/8"	5/8" 1/2" 3/8" 1/4"	9/16" 1/2" 3/8" 1/4"	1/2" 7/16" 3/8" 1/4"	7/16" 3/8" 5/16" 1/4"
Group 1	9d 9d 8d 7d 7d	8d 7d 7d 7d	7d 7d 6d 5d	6d 6d 5d 5d	5d 5d 5d 4d	4d 4d 3d 3d
Group 2	8d 8d 7d 7d 6d	7d 7d 6d 6d	6d 6d 5d 4d	5d 5d 4d 4d	5d 4d 4d 4d	4d 4d 3d 3d
Group 3	7d 7d 7d 6d 6d	7d 7d 6d 6d	5d 5d 5d 4d	5d 4d 4d 4d	4d 4d 4d 4d	4d 4d 3d 3d
Group 4	7d 7d 6d 6d 5d	7d 6d 5d 5d	4d 4d 4d 3d	4d 4d 4d 3d	4d 4d 4d 3d	3d 3d 3d 3d

Woods Commonly Used in Manufacture of Boxes Grouped According to Nail Holding Qualities

Group 1—W. Pine, Norway Pine, Aspen (Popple), Spruce, West (yel.) Pine, Cottonwood, Yellow Poplar, Balsam Fir, Chestnut, Sugar Pine, Cypress, Basswood, Willow, Noble Fir, Magnolia, Buckeye, White Fir, Cedar, Redwood, Butternut, Cucumber, Alpine Fir, Lodgepole Pine, Jack Pine.
Group 2—Southern Yellow Pine, Hemlock, North Carolina Pine, Douglas Fir, Larch.
Group 3—Red Gum, White Elm, Sycamore, Pumpkin Ash, Black Ash, Black Gum, Tupelo, Maple.
Group 4—Hard Maple, Beech, Oak, Hackberry, Birch, Rock Elm, White Ash, Hickory.

For 3d, 4d, 5d, 6d Cement Coated Nails

Nailing Sides to Ends			Nailing Top and Bottom to Ends		
When the Width of the Side is:—		Number of Nails to Drive	When Width of Top or Bottom is:—		Number of Nails to Drive
Over	Up to and Including		Over	Up to and Including	
2½"	4"	2	2½"	4½"	2
4"	5¾"	3	4½"	6½"	3
5¾"	7½"	4	6½"	8½"	4
7½"	9¼"	5	8½"	10½"	5
9¼"	11"	6	10½"	12½"	6
11"	12¾"	7	12½"	14½"	7
12¾"	14½"	8	14½"	16½"	8
14½"	16¼"	9	16½"	18½"	9
16¼"	18"	10	18½"	20½"	10
For each additional 1¾" in excess of 18" in width add 1 nail.			For each additional 2" in excess of 20½" in width add 1 nail.		

For 7d Cement Coated Nails

Nailing Sides to Ends			Nailing Top and Bottom to Ends		
When the Width of the Side is:—		Number of Nails to Drive	When Width of Top or Bottom is:—		Number of Nails to Drive
Over	Up to and Including		Over	Up to and Including	
2½"	4½"	2	2½"	5"	2
4½"	6½"	3	5"	7¼"	3
6½"	8½"	4	7¼"	9½"	4
8½"	10½"	5	9½"	11¾"	5
10½"	12½"	6	11¾"	14"	6
12½"	14½"	7	14"	16¼"	7
14½"	16½"	8	16¼"	18½"	8
16½"	18½"	9	18½"	20¾"	9
18½"	20½"	10	20¾"	23"	10
For each additional 2" in excess of 20½" in width add 1 nail.			For each additional 2¼" in excess of 23" in width add 1 nail.		

For 8d Cement Coated Nails

Nailing Sides to Ends			Nailing Top and Bottom to Ends		
When the Width of the Side is:—		Number of Nails to Drive	When Width of Top or Bottom is:—		Number of Nails to Drive
Over	Up To and Including		Over	Up To and Including	
2½"	5"	2	2½"	5½"	2
5"	7¼"	3	5½"	8"	3
7¼"	9½"	4	8"	10½"	4
9½"	11¾"	5	10½"	13"	5
11¾"	14"	6	13"	15½"	6
14"	16¼"	7	15½"	18"	7
16¼"	18½"	8	18"	20½"	8
18½"	20¾"	9	20½"	23"	9
20¾"	23"	10	23"	25½"	10
For each additional 2¼" in excess of 23" in width add 1 nail.			For each additional 2½" in excess of 25½" in width add 1 nail.		

For 9d Cement Coated Nails

Nailing Sides to Ends			Nailing Top and Bottom to Ends		
When the Width of the Side is:—		Number of Nails to Drive	When Width of Top or Bottom is:—		Number of Nails to Drive
Over	Up To and Including		Over	Up To and Including	
2½"	5½"	2	2½"	5¾"	2
5½"	8"	3	5¾"	8½"	3
8"	10½"	4	8½"	11¼"	4
10½"	13"	5	11¼"	14"	5
13"	15½"	6	14"	16¾"	6
15½"	18"	7	16¾"	19½"	7
18"	20½"	8	19½"	22¼"	8
20½"	23"	9	22¼"	25"	9
23"	25½"	10	25"	27¾"	10
For each additional 2½" in excess of 25½" in width add 1 nail.			For each additional 2¾" in excess of 27¾" in width add 1 nail.		

Tables showing groups of wood and nails to use covering stock of varying widths and thicknesses

governed by the same nailing rules, except that the nails should not be spaced closer than 6 to 8 inches because of the danger of splitting the board.

The following table governs:

When thickness of sides, top and bottom is:	Group 1 woods	Group 2 woods	Group 3 woods	Group 4 woods
7/8"	9d	8d	7d	7d
13/16"	8d	7d	7d	7d
5/8"	7d	6d	5d	4d
9/16"	6d	5d	5d	4d
1/2"	5d	5d	4d	4d
3/8" (See note)	4d	4d	4d	3d

Note: Except for very light weights, where the contents are packed in cartons or in excelsior, or similar materials, it is not considered good practice to side nail ⅜-inch boards. Side nailing in any thickness is not the best practice if the weights are exceptionally heavy. It is far safer to use a nailless metal strap around the girth or, better still, to reinforce the side nails with a strap.

Other Important Considerations

These tables assume that the nails which hold the sides to ends are driven into end grain of ends. When the grain in the ends is vertical the number specified for the sides and for the top and bottom, reverses. Where the ends have four cleats and all nails are driven into the cleats, space all nails as provided for, holding top and bottom to ends. Where the ends have two cleats or where the nails are staggered into ends and cleats, use the nailing specified for holding sides to ends.

The ends govern size of nail to use, as modified by thickness of sides, tops and bottoms. If ends and cleats are of the same thickness, drive approximately 50 per cent. of nails into ends and 50 per cent. into cleats. If end has 4 cleats of material thicker than the end itself, let cleats determine sizes of nail to be used and drive all nails into cleats.

If veneer (single ply or 3-ply) is used for sides, tops and bottoms the special large headed nail is advisable.

When Mixed Woods are Used

If the ends are made from woods of two groups, use the nails specified for the harder wood. For in-

(Continued on page 68)

Machinery & Equipment

Compact Chuck Stand

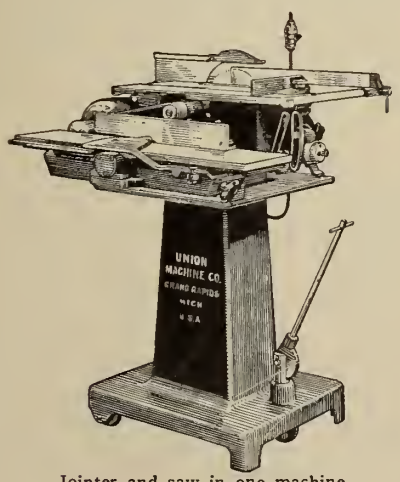
A new and effective motor driven chuck stand is shown in the accompanying illustration. It is the product of the L. G. McKnight & Son Co., of Gardner, Mass. The base is a cored iron column of rigid construction on top of which is mounted the motor which carries the arbor. The motor is of the ball bearing type. The end of the arbor is threaded to take the chuck. Various combinations of knives may

Motor driven chuck stand and samples of work

be used on different chucks so that a wide variety of work may be handled on this machine, including rounding the ends of stock, tapering, tenoning and tapering and chucking with round or square shoulder. The motor is one h.p. and runs at 36,000 r.p.m. The stock rest is adjustable to permit the handling of material of different diameters and dimensions, either round or square. Further particulars with regard to this equipment may be secured by writing the makers.

Combination Jointer and Bench Saw

Among the newer types of portable machines to be found on the market is the combination jointer and universal saw bench shown herewith. This machine is being handled in Canada by the A .R. Williams Machinery Company, of Toronto. The saw table can be tilted to an angle of 45 degs. and quickly locked. It is of ample size for the ordinary forms of work on equipment of this type. Provision is made for using both cross-cut and ripping gauges. It takes a saw 7 in. in diameter. The jointer tables are adjustable to any height by means of small hand holes. The adjustment of the front table permits making of cuts to a depth of one half inch and as a rabbet grooved has been included on the rear table, rabbets to a depth of one half inch may be cut. The jointer head is of the usual safety type and carries three high speed steel knives. The bearings throughout are ball bearing. As will be noticed this machine is mounted on wheels and may be quickly and conveniently moved to any part of the floor. The motor may be attached to any lamp socket and is so mounted that it may be quickly raised and lowered. This permits the belt to be shifted from saw to jointer and vice versa without any loss of time. The A. R. Williams Co. will be glad to furnish further particulars.



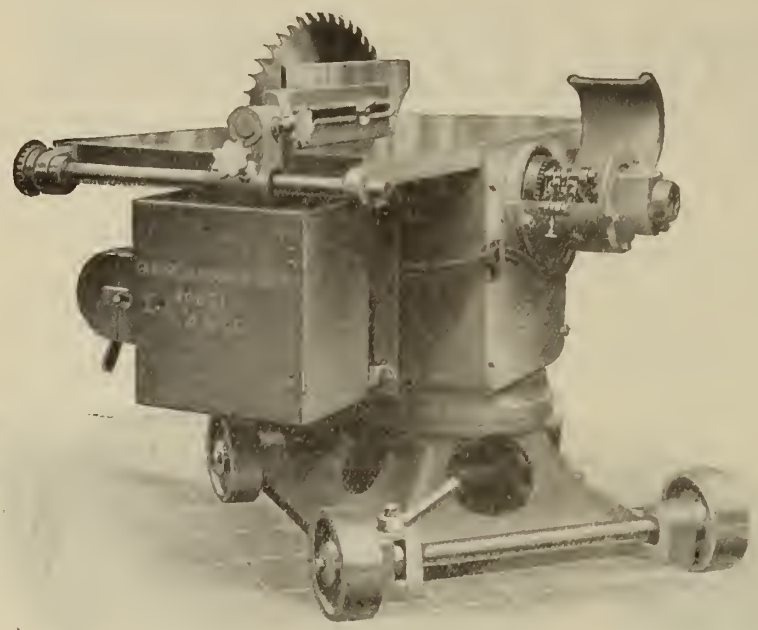
Jointer and saw in one machine

Electric Boring Machine

A new type of boring machine, the product of the Oliver Machinery Company, Grand Rapids, Mich., is shown in the accompanying illustration. The motor forms an integral part of the machine being mounted

Motor and fan mounted on spindle

directly on the boring spindle, the motor itself having no bearings. This arrangement provides a very desirable drive for the boring cutters. An unusual feature is the manner in which the blower has been mounted directly on the spindle at the top of the machine. The draft from this blower is conducted downwards and clears away the dust and shavings that ordinarily accumulate on the work and on the table. This machine will handle holes up to 2 in. in diameter and 6 in. deep with one stroke. The distance from the centre of the spindle to the column is 18 in. so that this machine will bore to the centre of 36in. stock. Some of the interesting features are that the self contained boring head moves vertically while boring, which tends for accurate work, the vertical



Portable saw bench carrying saw as large as thirty inches.

adjustment of the table is controlled by a conveniently located hand wheel while the table has a universal adjustment which permits tilting in all directions to that angle boring may be done without jigs or forms. The metal table is drilled for wood screws so that a wood sub-table may be attached is desired. The motor is of the fully enclosed type and runs on either two or three phase, sixty cycle current. It is designed to run at 3,600 r.p.m. The boring spindle is mounted in high grade ball bearings which result in a low power consumption. The moving parts are well balanced so that the machine can be operated with little effort. Further particulars of this equipment may be had from the makers or from their Canadian representatives the Canadian Fairbanks Morse Co., Toronto.

Portable Electric Saw Bench

An unusually heavy type of portable saw bench is shown herewith. The motor is of the completely enclosed slipring type, 550 volts, 25 cycle, 3 phase, fitted with ball bearings. The motor frame is entirely below the table and is carried on a circular race enabling the table and motor to be turned through a complete circle to suit the work to be done. The motor drive is by means of chain totally inclosed. The stand consists of a strong iron casting, having a race to suit the motor and is carried on four bogey wheels to enable the saw bench to be easily moved from place to place. One of the wheels is provided with a clamp which locks the wheels and prevents the bench from moving when in use. The table is of the rise and fall type, having a hand wheel placed in a convenient position underneath, and by means of worm and wheel pinions, and racks the rising or lowering of the table is obtained. The table is provided with a movable fence which can be used for bevel cutting and when not in use can be turned over the end of the bench leaving it quite clear for cross cutting. Underneath the table in a suitable position a totally inclosed starting switch is fitted with the necessary terminals to which the supply cables can be connected. Saws up to 30" may be used. Further information may be secured from Macaulay Pope, 45 Jarvis St., Toronto.

How We Nail Our Boxes

(Continued from page 66)

stance, if the ends are made of White Pine mixed with Hemlock, the nails specified for Group 2 woods should be used. If the nails specified for the White Pine are either 9d, 8d or 7d the use of nails one penny smaller automatically provides for closer spacing. If, however, the nails specified are 6d or smaller, the substitution of nails one penny smaller should be accompanied by closer spacing (one quarter inch closer spacing is the accepted rule) if that can be done.

The number of nails specified is not the maximum number which can be driven. Increasing the number of nails 50 per cent. will increase the strength of the box more than 100 per cent. on an average. The danger from splits, due to driving twice or even three times as many nails as specified in these tables is negligible. In a great majority of cases it is wiser to increase the number of nails driven. It is also far more effective in providing additional serviceability and much more economical than increasing the thickness of the material.

The woodworking industry dealing with such vital necessities as homes and furniture should be able to so mould conditions that it would attract men from other industries rather than see many of their best men go to other fields because they find that they can do better for themselves. In this connection as more and more Canadian woodworking and furniture plants are placed upon fair accurate incentive rates, each individual employee will have a stronger incentive to produce more and he will then be in a position to earn in direct proportion to the volume of work he turns out.

Upholstering and Trimming

Special Upholstering Operations

Type of Arm and Details of Frame Influencing Factors—Alternative Methods of Treating Backs

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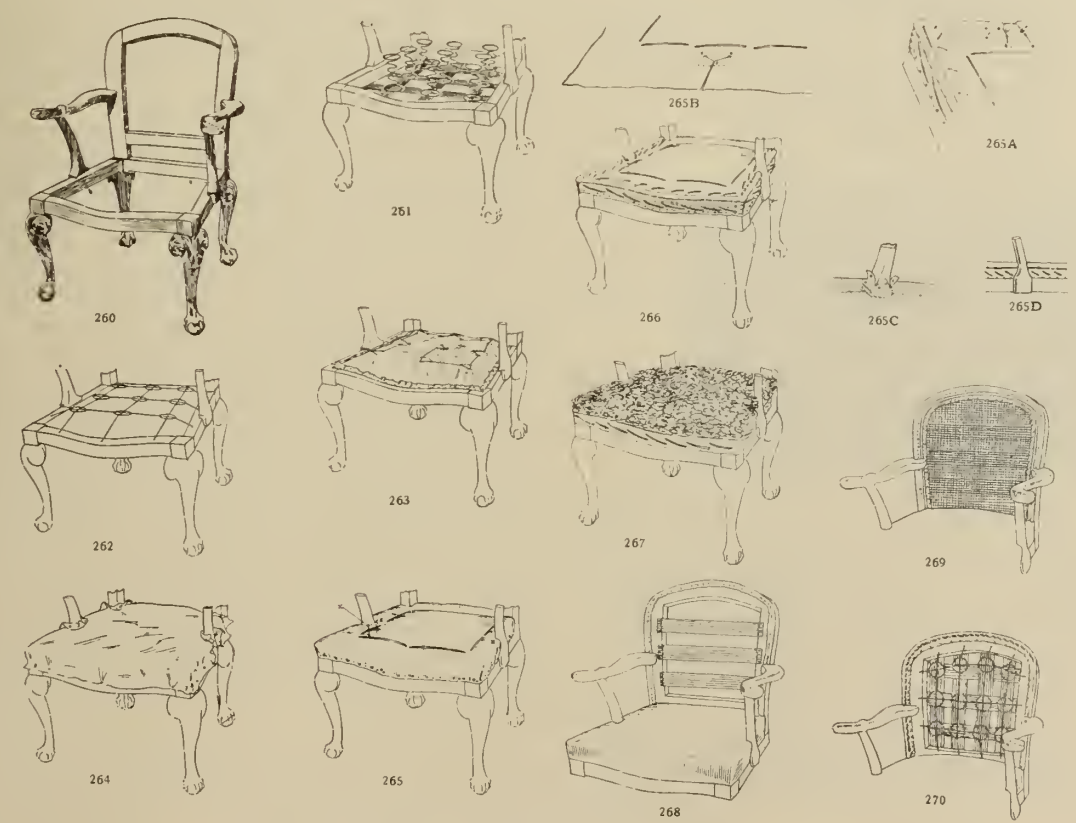
The chair frame shown in Fig. 260 requires a different character of treatment in the upholstering to any previously described, because of the shape of the arm support. The frame is made without tacking blocks and the arm support is widest at the base where it joins the frame. Furthermore, the arm being showwood and the way in which the support is attached to the frame makes it necessary that the upholstered seat should hug the finished wood at the point indicated by the dotted line A, Fig. 260 without any unsightly gap.

Because of the shape of this chair the seat is best built up by the use of the method known as double stuffing. After the springs have been placed in position as shown in Fig. 261, tied down as in Fig. 262, and covered with Burlap as in Fig. 263, a layer of hair is placed over the springs and the seat covered loosely with a piece of burlap slip-tacked into position as shown in Fig. 264, but not cut at the corners or around the arms.

The outer burlaps are next stitched through with long stitches to the burlaps which covers the springs and the edges stuffed up and tacked as shown in Fig. 265. The purpose of the stitches was two-fold—first, to keep the surface of the seat flat; and second, to provide a pocket around the outer edge which could be stuffed up firmly for stitching without interfering with the necessary resiliency of the middle of the seat.

By referring to the top view of the enlarged detail of the portion adjoining the arm, Fig. 265A, it will be noticed that the additional stitches have been placed at the inner corners of the arm upright, these stitches being marked XX in Fig. 265. These stitches go through the under burlaps, the purpose being to

(Continued on page 71)



Various operations in building seats and backs

Retrospect of Midsummer Exhibits Reveals

Few Important Developments in Furniture Design

Two-tone Effects Decline in Popularity—Square End Bed Shows Signs of Returning —Attention to Details which Make for Convenience—What's New in Upholstering Materials

The trend in furniture design, as reflected in the mid-summer furniture exhibits, shows few developments since the beginning of the year. The manufacturers are showing numerous new suites which furnish proof of the continued progress that is being made by the Canadian furniture industry in the refinements of design and originality of conception, but no radical changes have been introduced—which is of course natural, considering the sentiment of the times.

Decline in Two-tone Effects

In case goods, it is worthy to note that mahogany shows a tendency to come back. It is scarcely noticeable on this side of the line, but the movement is gaining way in the States, and there is a possibility that it may gradually be restored to something of its old-time popularity. Another tendency that is casting its shadow before is the decline in the demand for two-tone effects. Their day is just about over for the present, according to some of the best-informed manufacturers. Those that are showing the two-tone effects are "toning them down" in many instances, so as to secure harmonious variation without strong contrasts. One suite in which this is happily exemplified combines bur walnut with crotch mahogany to excellent advantage, the latter wood being used for the drawer fronts and trimmings. Italian designs are featured by many of the manufacturers and Queen Anne also still holds a place as usual.

Catering to Convenience and Efficiency

One is struck with the ever increasing attention that is being paid to detail. It is in the little things that make for greater convenience and efficiency that the progress in furniture manufacture is most noticeable. The various designs of chiffoniere, under their different appellations, exemplify this. Manufacturers have been vying with each other in the inclusion of every detail that would add to convenience, and to-day a customer is supplied with a piece of bedroom equipment that anticipates all his requirements.

Little trays for cuff links and collar buttons and likewise for hairpins, scarfpins, etc., velvet-lined drawers for cutlery with removable double bottoms, and various other little conveniences that appeal to the feminine eye, particularly—these, in addition to high quality workmanship and finish, are some of the selling points by which manufacturers are seeking to gain and hold the interest of the consumer.

A combination server and china cabinet in a dining room suite might also be cited as another instance of this appeal of efficiency as well as beauty.

One development of importance in the design of beds is the trend away from the bow end. This is still shown, but some progressive manufacturers say that the square end is coming back and will shortly be the feature.

Imported Upholstering Materials

In over-stuffed goods, there is little new to be said. As forecasted at previous exhibits, the flare arm has largely taken the place of the pillow arm in chesterfield suites. Mohair still holds the field. Combination effects are shown by the Canadian manufacturers as strongly as ever, though we learn that in the States these are less prominent—largely, it is understood, due to the fact that great difficulty is being experienced by the U.S. manufacturers in securing figured patterns and they have been trying to replace them with all-over brocaded patterns to some extent. In Canada, English mohairs are now being used exclusively by some of the largest manufacturers. A material which has newly been imported from Europe is moquette. It is of very heavy texture, almost like a light carpet, and is said to wear almost indefinitely. It is not generally used for the entire upholstering of a suite, but is frequently confined to the cushion and the back, where the greatest wear comes. Holland friezes are also being imported and are considered as a good feature by some manufacturers. Metallic effects in tapestries are fairly strong.

Taupe is the featured shade in chesterfield suites, and anything between that and a seal brown tone is good.

Special Upholstering Operations

(Continued from page 69)

keep a sufficient degree of firmness at the opening which surrounds the upright, to enable the manipulation of the burlaps in the forming of the edge. The method of cutting the canvas at the arm is indicated in the diagrams Fig. 265B and in the enlarged detail, Fig. 265C, which shows the burlaps cut and turned up at the arm. For purpose of illustration the arm upright in Fig. 265A is shown cut away to give an unobstructed view. One of the chief difficulties in the upholstering of this type of seat lies in the fact that the arm support is wide at the base and narrows sharply immediately above. This calls for very careful manipulation in order to prevent any unsightly gaps on the bias lines 1-1 and 2-2 Fig. 265B. The surplus burlaps indicated by XJ in Fig. 265C are not trimmed away but are stuffed in between the filling and the arm where they assist in holding the filling material in place, as shown in Fig. 265D.

After the edge has been stuffed up and the burlaps turned in and tacked to the rail as shown in Fig. 265, the next step is to regulate this stuffed portion into an edge and adding two rows of stitching as indicated in Fig. 266. The extreme top edge of this double stuffed portion is allowed to project slightly beyond the outline of the chair rail in order to provide a smooth edge unbroken from the top of edge to bottom of rail as is indicated in the appearance of the finished chair, Fig. 271.

Following the stitching of the edges all around a sufficient coating of hair is placed upon the top of the seat to round over into the required shape as a second stuffing, Fig. 267, and this is in turn covered with muslin, producing the finished appearance in Fig. 268.

The back of this type of chair is capable of two different methods of treatment; using a nosing after the manner shown in Fig. 268 or a stitched edge as shown in Fig. 270. The nosing is formed by back tacking a piece of fabric on the flat surface of the back as close to the outer edge of the frame as it is possible to tack it. A sufficient allowance of extra material must be made at the corners of this strip of material, whether composed of burlaps or canton flannel, is stuffed with hair to produce a round roll one half to three quarters of an inch in diameter, filled with sufficient firmness to make stitching unnecessary, but kept smooth and uniform throughout its length. It is intended to serve the purpose of an edge and the symmetry of the finished back will be largely influenced by the care exercised in the formation of this roll or nosing. See Fig 269.

Should it be desired to upholster this chair with springs in the back, a webbing is put on the outside back as shown in Fig. 268 and the nosing in this case is built up to a height of about one and a half inches and given a stitch. The springs are then covered with burlaps in the regular way and a coating of hair added and the whole covered with muslin as has already been explained in connection with other pieces. The appearance of the finished chair is shown in Fig. 271.

Several times machines have been invented to do the work of hand carvers. Yet in spite of these, the hand carvers are still hard at work.

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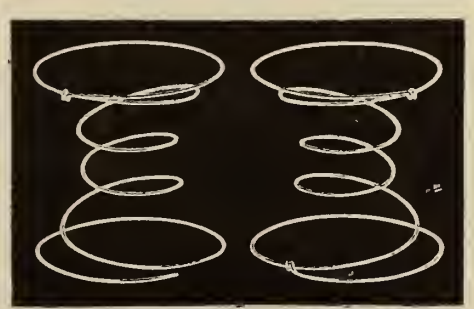

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Application of "Polychrome"

Term Not Applicable to all Many Colored Finishes—Suggestions for Securing Attractive Effects — Confused with Decorated Furniture

Polychrome is applied in various ways. There is polychrome this, that and the other thing. You can go into a department store, and see a lot of composition ware made up into candlesticks, book ends tnd sundry pieces, not omitting lamps, and labelled "Polychrome." You can go into a picture frame store, find polychrome moulding and polychrome standard frames. Or you may go into a furniture store and see standard lamps finished in polychrome and not a bit of wood showing, and fifty feet farther on you will see a beautiful walnut table labeled "Polychrome" because there is a bit of coloring on the piece. There are dozens of other places where the word is used, no matter how the wood is finished. As long as there is some coloring, the term is applied.

It is not to be wondered at that a finisher or the head of a vocational school is somewhat at loss just how to begin to finish a piece properly. There are no conventional rules for him to follow. There is simply no standard. The whole thing is ideal, and it might be safely said that many of the designs are not correct for a polychrome finish, and ,again, the application of color is as foreign to the style as black is from white, yet it was conceived by somebody and sold as polychrome.

A Gilt and Color Finish

It is therefore difficult to come to the assistance of our friends who are attempting to make this finish and to make it in a style that depicts that which is meant by the term, which refers to the gold finishers of centuries ago, which were relieved with bright colors and then by the dust of ages were subdued. To imitate this subdued appearance we had to resort to a smutting operation, and when this is referred to, it will be understood that this is the means by which polychrome as described and as referring to the old time finish is produced.

In an effort to convey the methods that are employed in producing the various so-called polychrome finishes, we believe it best to give the process and then let the reader take therefrom such methods as he prefers for the piece or the work at hand. Take composition materials, such as plaster of paris, compo and the sundry products, particularly of the Italian art, which are more or less porous. These are best prepared with a coat of shellac to stop all suction. The underground of the background, as a rule, is gold, and for this purpose a very fine lining gold bronze should be used. This, owing to its fineness, gives the appearance of metal. When the suction is stopped, this lining bronze can be applied with a brush by mixing it with a rather thin white shellac. Orange shellac has a tendency to bring out a brownish tint, whereas the white shellac does not affect the color, but, better still, where a quantity of this work has to be done and a spray gun is at hand the best kind of work is accomplished by using a modern wood lacquer thinned 50 per cent with the thinner that comes for this purpose.

Lacquer May Be Used

The wood lacquer serves two purposes. Not only does it give the brilliancy of the lining gold, but it also makes a waterproof coat, and still further, when the colors are applied they stand out brilliantly. The coloring is a matter of choice. In pieces where there are flutings, the recesses are colored with an oil paint, usually decorator's colors, which come in three and four-ounce tubes, thinned with turpentine or white japan. The writer recommends the soft tone, but some have resorted to the brilliant colors.

Carvings and recesses, as a rule are left in gold, but the raised work is given tints. These may be blues, yellows and reds, somewhat toned down with an intermediate color, taking away that brilliancy which does not go with proper polychroming. When these colors are applied and thoroughly dried, protect them if working with a brush, with a wash coat of shellac.

A wash coat of shellac can be the regular liquid shellac of the market thinned with two or three parts of alcohol, but if the spray is accessible, use a wash coat of wood lacquer. This must be done carefully either with the brush or the spray so as not to lift the colors. It is also desirable to blend these colors into each other. Having protected them, you should have a background of gold, with colors graduated in relief. Protected with the shellac or wood lacquer, it is ready for ageing, which we call smutting, and which is done as follows:

Securing the Aged effect

A rotten stone powder, sometimes darkened with burnt umber or Van Dyke brown, all in the dry, is mixed with a waxing solution or a thin japan, which in turn is thinned with turpentine. The idea is to get enough adhesiveness to hold the powder in place, not drying too fast, so that when the entire piece is covered it can be wiped off, leaving the smut powders partially in the recesses and when dry there is enough adhesive material in the liquid to hold it in place so that subsequent usage will not remove this effect.

We stated this was the method usually employed on composition material. It is also applicable to mouldings and picture frames, but differs materially in the production of standard lamps, which are now so popular. However, there must be two classifications for these, and if we were to include the metal standards we would have to make two more classifications, as the finishing of metal standards is different, they being done entirely by lacquer and lacquer enamel.

The wood standard entirely polychrome need not

be of a high grade quality of wood, as it is entirely covered. The design, however, should present turnings, flutings and possibly to bring out the polychrome effect, otherwise the finish will be a misfit. The stick part, referring to that four feet of wood as a rule, is coated with lining powder bronze and its straight line effect is broken by a very ingenious method called "crackling the finish."

A paste is prepared of umber and Van Dyke brown to which some black has been added, again a matter of taste, but the darker colors are in preference. Then a piece of wrapping paper is crinkled and made into a pad about the size of a hand. On this is spread this blackish paste and wiped off with a knife. The paste remains in the crevices of the paper, which is then pressed around the stick and deposits the outline of the crevices on the gold and is allowed to dry there. The base may be made up in bright colors or soft tones and subdued according to the general taste of the operator. He may, of course, use the entire bronzing idea throughout. This is all optional. He may incorporate brilliant colors, but it all depends upon the general design of the lamp. The crackle effect is protected with shellac or wood lecquer and is far better done with a spray, but if the brush is used it must be a very fine brush and the spreading done very lightly.

If the base is plain turned, the crackle effect can be carried out on it, but it will be found that this does not take with the trade. It is very pretty, but one does not expect so solid a part to have a crackle finish.

Other Attractive Compinations

The "splash effect" is to depict age, as though the gold had worn off, but, in fact, in this production it is not. The same paste is applied by splashing, that is, a well filled brush is wiped off the edge of the pail (the brush should be a stiff brittle) and then passed over the work, striking lightly, heavier to the centre, and off again, giving the appearance of the metal showing through the gold. This might be called "trick finishing," but it has a very pleasing effect. "Splash and crackle," however, should never be on the same piece.

Furniture, such as tables, chairs and the like, may be polychromed throughout, but in such cases can only be considered parlor pieces and are not intended for daily use. If properly prepared, the design presents opportunities in its carvings, flutings and the like for the application of gold and color.

It will be found that the feet of chairs and the tops of the back in such designs offer places for polychrome decoration. The flutings are carefully colored or gilded, and then from the ends toward the centre a soft-tone green, reddish brown or a very dull red is drawn from the end toward the centre, running up, according to the length of the fluting about a third of the way. The decoration below is given a series of colors all running into each other. In many cases like this the attempt of polychrome decoration stops with the color and no smutting is done. It depends entirely upon the design whether or not smutting would improve it, but you can readily imagine the difficulty that would be encounered if one attempt to smut one part of a fine piece of furniture without carrying out the idea farther than the feet and legs. With tables it is possible to put a polychrome border around them but it is our idea that unless one desires to make an odd piece it is better to refrain from polychroming furniture along these lines. The fad has passed and is only used in novelty production.

We must not confuse decorated enamel furniture with polychrome. This is an entirely different proposition and the decorating of it is an art by itself.—The Furniture Manufacturer and Artisan.

How to Secure a Fine Rubbed Finish

Troubles Often Encountered when Rubbing Varnish—Suggestions for Eliminating Common Faults—Method and Abrasive Material Used Often to Blame

Every user of rubbing or polishing varnishes has probably had trouble at one time or another with caking, picking up, pulling out, sweating and other rubbing troubles. Work which looks perfect up to the rubbing operation is often damaged seriously at this point. Many times the trouble is due to improper drying conditions, improper applications of varnish, recoating too soon, improper rubbing pads or other conditions which would have a bad effect on the most perfect rubbing varnish made. It is hardly fair to lay the entire blame on the varnish when many other things may be at the bottom of the trouble.

No written account could hope to give all the causes of rubbing troubles nor point out all the methods of overcoming them. In this little article, however, will be found some of the most common causes and a few suggestions that may be found helpful in times of trouble.

When Varnish Sticks to Pad

During the rubbing process, varnish sometimes sticks to the rubbing pad and forms a cake which will mar the rubbed surface if it is not removed. This formation of a cake of varnish on the rubbing pad is what is known as "caking." The terms "picking up" and "pulling out" describe the condition when small spots of varnish are apparently pulled out during the rubbing operation.

Some of the more common causes of caking are, improperly dried varnish, not enough water, too much pumice stone, inferior pumice stone, too much friction on the rubbing block, improper type of rubbing felt, dirty varnish and similar causes.

By adding soap to the rubbing water until a nice suds is formed, many finishers are able to cure the tendency of caking. It is said, too, that varnish can be rubbed greener if soapy water is used.

A little rotten stone mixed in the pumice stone will sometimes eliminate caking. The finished work will have a little higher lustre than if straight pumice is used, however.

Coarse felt that contains no hard ribs will not cake as rapidly as a finely pressed felt, because the pores or air pockets in the coarser felt are not so easily closed up after the felt is wet and in use.

Causes of "Picking Up"

Where rubbing machines are used, care should be taken to move them over the surface in such a way as to cause as little heat from friction as possible.

The pulling out or picking up of varnish during the rubbing operation may be caused by the use of dirty varnish or by allowing specks of dirt to settle on the wet varnish before it has dried sufficiently to become dust free.

Many rubbing varnishes of excellent qualities show a tendency to form a thin skin on the surface if allowed to remain exposed to the air for some time in partially filled packages, or in drums where the bung has been left open. This partially hardened mass may escape unnoticed until broken up into very small particles by the spray gun. As a rule these gummy particles do not dry as well as the liquid varnish. As a result they may stick to the pad during the rubbing operation and produce pull-outs or other imperfections in the finish.

If sufficient lubricant (water or rubbing oil) is not used with the pumice stone the excessive friction is likely to generate enough heat to soften the varnish and cause caking or picking up. Trouble is also caused by using a poor grade of pumice that powders up like clay and cakes on the pad. If the pumice contains any grit or harsh materials it may cause trouble by producing severe scratches in the surface.

Must be Thoroughly Dry

When varnish becomes more or less glossy after it is dull rubbed, it is said to "sweat." It should be borne in mind, however, that practically all dull-rubbing varnishes can be polished to some extent, due to the fact that they are short in oil content and contain gums which take a polish. This polishing effect should not be confused with sweating.

Sweating is caused by rubbing the varnish before it is sufficiently dry. Trouble from this cause will be increased if the varnish has been piled on too heavily and is not dry all the way through. The use or pumice stone which is too fine will also tend to produce sweating. Likewise, too much friction at the time of rubbing may heat up the varnish and cause it to sweat.

The term "scaling" describes the cob-webby appearance of varnish when the top coat has been rubbed through in places, and shows the next coat of varnish underneath. Scaling does not prove to be a detriment where a flowing coat is applied after the coarse rubbing, provided the undercoats are dry enough to prevent heaving or kicking up, because this coat goes on a level surface and is not likely to be rubbed through during the fine rubbing process. When a coat of varnish is not used after the coarse rubbing, scaling is a very undesirable feature.

Why Varnish Rubs Through

In its final analysis scaling is caused by an uneven surface—caused by uneven wood surface or otherwise—which allows some parts of the varnish to be rubbed more than others. If the top coat of varnish were not rubbed through, there would be no scaling, but if the varnish film has been built up properly there should be no scaling even though the top coat is rubbed through in places. It is because the coats are improperly knitted together that the edges of the rubbed-through spot become visible. Further rubbing causes the edges of the broken spot to roll back and forms this scale.

If one coat of varnish is allowed to become too dry and hard before the next one is applied, scaling is likely to result because the two coats do not properly knit to each other. Where varnish is piled on too heavy and it top-dries, the rubbing operation is likely to cause the varnish to sweat and scale. If each coat is applied at the right time in the right way, and if the last coat is dried properly, there is not likely to be any scaling. Some varnishes do not have good solvent properties, and for this reason the various coats are not likely to knit to each other as well as they should. The use of entirely different types of varnish, one over the other, is also likely to cause scaling.

Light Sanding Helps Some

It is a fact that manufacturers who lightly sand or hair-off each coat before the next one is applied do not have much trouble with scaling. By knocking off the gloss between coats the varnish seems to knit better.

It is sometimes difficult to differentiate between "scaling" and "kicking up." The latter trouble is really the result of the first one. If the varnish scales during the coarse rubbing and a flow coat is applied over this scaled varnish, some of it may sink into the scales or rubbed-through spots because the underneath coats there are not as dry as in other places. This causes the scale to show through the flow coat and the varnish is said to "heave" or "kick up."

If the varnish is coated too often, if it is coated too heavy, or if it is coated unevenly, it top dries and will remain more or less soft and mushy underneath. When it is rubbed it will break through in spots—and these spots will be more porous or softer than the surrounding surface. The flow coat of varnish will sink into these spots and cause kicking up.

Be careful to apply the varnish properly and let it dry properly. Then there will be very little trouble from kicking up, or any of the other rubbing troubles. —"Veneers," Indianapolis.

The Bee as a Salesman

The home office of the firm I represent has us fellows on a quota system," said a salesman to a country merchant. "We are expected to make seven or eight calls a day, rain or shine, no matter what the train schedules may be. I wish the sales manager would get out here on the territory himself. He would soon see that he is asking too much of any man."

"Maybe he would, and maybe he wouldn't," commented the merchant. "Everyone, these days has to make a lot of calls, or a lot of sales to earn his living. Whenever I get discouraged about the number of small items I have to sell, day after day, just to pay my rent, overhead, and salaries, I try to think of my bees."

"There is less than one-eighth of a grain of sugar in a clover blossom. Now a pound of honey has 7,000 grains. That means that the bee must visit 56,000 separate clover blossoms in order to make a pound of honey. Moreover, each clover has about sixty flower tubes and into each one of these the bee must poke his nose. Sixty times 56,000 makes 3,360,000—the number of operations necessary to produce one little pound of honey."

"Looks to me" said the salesman, "as if the bee gets a mighty small commission on the honey he secures from his millions of calls."

Shellac and Shellac Compound

Because the term "shellac" has been applied not only to products composed of shellac gum dissolved in alcohol, but also to compounds of shellac gum and other materials, the National Association of Purchasing Agents has passed a resolution urging stricter use of the word. The association feels that the practice, if continued, will result in confusion in the trade and deception of purchasers. The resolution says the term "shellac" on labels or on advertising means only shellac gum cut or dissolved in alcohol. If such shellac be reduced, reinforced or modified, the term "shellac" shall likewise be modified by the addition of the word "compound" in conspicuous letters. Where the shellac content is less than fifty per cent of the weight of the material, the association favors elimination of the use of "shellac" as a descriptive title on labels or advertising unless it is part of a formula or the words "substitute" or "limitation" are added. It is suggested that these products be sold under arbitrary trade names or brands.

Spray Equipment Catalog

An extremely interesting volume was received dealing with spray equipment. It was a new catalogue issued by the Peerless Pneumatic Systems, Inc. Chicago, and described their line of spraying equipment and accessories. The book is freely illustrated with cuts showing various details of their line of spraying devices. The equipment illustrated and described includes spray guns, instrument board, air and varnish heaters, condensation and oil removers, spray booths of various sizes and shapes including "two operator" spray booths, Peerless exhaust system, containers, pressure tanks, gauges, regulating devices and compressor units. The instrument board, which may be attached to or near the booth, is a very compact arrangement and has mounted upon it the condensation and oil remover, gauges, regulating valves, air heater, varnish heater and a solvent cup in which the gum is placed when not in use. In addition to the descriptive matter the catalogue contains interesting information relative to the application of finishing materials with the spray machine.

High Temperature Painting for Wood Frame Bodies

One of the most interesting developments which gives considerable promise in the automotive field is a method designed to enable the high heat treatment of a wood frame body, thus to obtain the "baked" enamel finishes now being exploited with the all-steel construction.

It has generally been understood that motor car bodies having a wood frame, necessarily take the slow finishing process as conducted at very moderate temperatures. In the light of rapid production methods there is a real time handicap in wood frame body finishing with its attendant expense on the medium priced and cheaper jobs as compared with the rapid high temperature baking process developed coincident with the development of the all-metal job. It has been pointed out that the superior qualities of the wood frame body as regards comfort and service have never been assailed, though luster and permanence have been ascribed to high temperature baking finishes alone.

All-steel bodies, i. e., bodies in which actually the door frames, pillars, in fact all of the construction is of metal, are usually enamelled for baking at temperatures between 400 and 500 degress Fahrenheit. This finish restricted practically to the color black, is rapid and produces a hard enamel finish which many manufacturers claim is superior in every respect to other finishes. In view of these conditions, hardwood producers may look with particular favor upon a process which will permit a 400 degree heat treatment of a wood frame body. This process is understood as being one which provides a protection to the wood parts by means of a heat resisting cement, although it is claimed to be in use in production work at one of the very large factories at the present time.

Further information is being sought so that the comparative merits of this new process and the enameling of the all-steel job may be definitely ascertained.

Mirror Plate Prices to Remain Firm

In an address before a number of Grand Rapids furniture manufacturers, Wm. B. Banks of the Hart Mirror Plate Co., gave a brief review of the situation with regard to mirror plates. He intimated that there was no prospect of lower prices for some time.

At the present time European factories are loaded up with orders which will carry them well through the Fall. The reports from the automobile factories are that sales on open cars are lagging, while there are not enough closed cars, which carry more plate glass. In the building trades there has been a let-up in new building lately because of the excessive demands of labor, but a large number of structures have been erected and these must be enclosed before Fall. As a result the jobbing trade is expecting a big demand during the months of August, September and October.

Some mirror manufacturers are forced to pay a premium to secure the glass they need at the present time. We have paid as high as $2 a foot for plate glass in order to take care of our customers. The fact that mirror manufacturers have had to buy 'premium glass' is a factor in the price of the mirror plate to the furniture manufacturer.

American glass factories during the month of May operated on the basis of 100,000,000 feet a year, a record production. Last year the glass production was 70,000,000 feet. The American factories have no surplus stock on hand. Another factor accounting for the difficulty of getting glass from abroad is the railroad strike in Europe. I read recently that in Belgium, which is a large exporter of glass to this country, ten big plants were shut down as a result of the strike.

I don't think that we will see any higher prices on mirror plate, but I also see absolutely no reason to hope for any lower prices for some time to come, particularly on the higher grades.

Undoubtedly one of the reasons for the rumor of lower glass prices is the fact that some German glass has recently been imported to this country. This glass is fragile and is very doubtful if it is suitable for any article of furniture except those carrying very small plates.

There are several new glass factories in the course of construction in this country, but we will not get any benefit from them until some time during the first half of 1924."

A Logical Conclusion

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Veneers and Panels

Open Veneer Joints

Various Reasons for Imperfect Joints Outlined—Drying Veneer Tends to Eliminate This Trouble—More Prevalent in Winter Than in Summer

By S. Y. Thorne

When a man makes a perfectly tight glue joint with the tape on the outside, and then finds it has opened sometime between the time he examined it and the time it was removed from the press he feels himself confronted with a perplexing problem. But these things frequently happen. A case of that kind came to my attention some time ago. The man claimed that he had taken every precaution to have the joint tight, to get the stock under the pressure as soon as possible after the veneer was laid on the glue. He also placed emphasis on the statement that the veneer had been redried before it was laid. But there was the open joint, and what caused it was the question he was anxious to have answered. It was easy to answer when we discovered that the veneer had been redried after it had been taped. The joint had been well made in the first place, but had opened during the drying. The explanation was so simple that the man wondered why he had not discovered it himself at the beginning.

Become Visible After Finishing

Another case was that of some joints that opened after the stock had reached the finishing room and had received a coat of varnish. The openings were very slight—so slight in fact that they would not be noticed when the wood was in the white, and the fact that they had not been discovered until after the stock had received a coat of varnish led some to believe that something in the finishing room had caused them. But here was the cause of the trouble: The taping had been done with glue which had been spread on the veneer, and the moisture in the glue had caused the veneer to swell along the joint. During the drying of the stock subsequent to removal from the press, shrinking of the swollen part had taken place, and this shrinking had caused the joint to open slightly. A check, or opening, too small to be visible to the naked eye becomes quite prominent after the varnish is applied. In some instances the varnish shrinks into the check and acts as a magnifier; in other cases the varnish itself checks, and it is really the crack in the varnish that is seen rather than the open joint in the veneer.

There is one thing to be remembered in connection with the problem of open joints that have been well made in the first place: they will never open unless the veneer shrinks, and the veneer will not shrink unless it contains surplus moisture. If veneer is dry at the time of taping, and is placed under the pressure before it has time to absorb enough moisture from the glue to cause swelling, it will remain tight for all time. Whenever joints open, therefore, we must look for the source of moisture either before or after taping in order to discover the cause of shrinking.

Method of Taping Important

The ordinary adhesive tape does not necessitate the use of sufficient moisture to cause the veneer to swell; and for that reason I favor the adhesive tape in preference to the use of glue. There does not seem to be any good reason for using glue in taping unless the veneer is laid with the taped side down, then it is, of course, necessary to make a permanent joint between the tape and veneer. But there does not seem to be any good reason for laying veneer with the taped side down except in the case of crossbanding that is laid at the same time as the face veneer; and in that case little harm can result from the joint opening. But modern practice, where the best work is wanted, is to lay the crossbanding first with the taped side up; and after the stock has been given a period of drying the tape is cleaned off and the surfare made smooth and level for the face veneer.

Some shops have no trouble with open joints except in the case of gum veneer, and cannot understand why this veneer should open when the same practice is followed in each case. But gum veneer is just a little different from any other wood and requires just a little more careful treatment. For a long time many refused to use this wood because of its meanness in refusing to submit to any of the established rules of practice in working woods. But careful study of this wood on the part of those who were exploiting it has revealed ways by which some of this meanness can be overcome.

Dryness of Stock Controlling Factor

Careful study of veneer problems has convinced me that veneer cannot be too dry at the time of laying; and I would lay special stress on that statement when discussing gum veneers. Some one has said, "dry it until you are sure it is dry enough—then dry it some more;" and that is good advice to follow. But I would add to that advice: After it is dry, keep it dry. Gum wood takes up moisture very quickly, and unless every precaution is taken to prevent the absorption of moisture it will take up enough to cause the joints in veneer to open. It requires much less moisture to cause joints to open during the process of drying than to cause checking. In fact, I am not certain that gum veneer will check as readily as will walnut or mahogany veneer, and if that is so it is one thing in its favor.

Those who have trouble with open joints usually find them more prevalent in winter than in the summer; and that applies more or less to all kinds of veneer. In the case of gum veneer, while it is quite ready to absorb moisture at all times, it is equally ready to expel it under favorable conditions. The

atmosphere of the summer months is usually heavily charged with moisture, and wood will not dry below the moisture content of the surrounding air. But the air of winter is more dry and extracts moisture from surrounding objects more readily than during the humid months of summer; and increases the liability of veneer to shrink beyond the point of safety.

Of course, the fact that there is less danger of veneer shrinking beyond the point of safety in the summer months should not be an inducement to relinquish any precaution. It is true the goods may be shipped out of the shop before winter comes; but when winter does come it will follow the goods, and the effect of winter there will be the same as though the goods had remained in the shop. "Eternal vigilance" is the price of closed joints in veneer that will remain permanently closed.—"Veneers," Indianapolis.

Who Was the Larger Loser?

Purchaser Recently Returned Suite of Furniture to Dealer Because of Defective Veneered Work—Inferior Work Reflects back on Producer

By S. H. Johnstone

Recently I found it necessary to return a bedroom suite to the dealer from whom it was purchased. The reason for this was careless, inferior workmanship, all veneered surfaces being a mass of checks and many of the larger surfaces being marred by unsightly putty and stick shellac patches. There can be no excuse for furniture like this finding its way on the market as a little care and attention to details and some sort of close supervision and inspection would ensure none but dependable, serviceable furniture finding its way to the floors of the dealer.

If I were a furniture dealer and one of my customers had occasion to return a complete suite because of such defects I would certainly be loath to again stock the product of that particular manufacturer. More than that I would feel that the maker of that suite should stand the additional expense to which I was put in making an exchange, and perhaps even go as far as to insist that the maker recall the suite to the factory replacing it with one that would pass inspection. In this particular case there is no doubt but that the manufacturer received a "black eye" that will probably cost him some business.

Price Should Not be a Factor

It would not be so bad or, rather, one would not feel so strongly about it, if this were a cheap suite but it was medium grade walnut furniture selling at $475 for a six piece bedroom set. At that price one has every reason to expect and demand a well made article.

Another unusual feature of this incident was that the manager of the store attempted to argue that because this furniture was veneered checks and open joints could be expected. There always has existed on the part of the buying public an aversion to veneered furniture, though in recent years this has been overcome to a certain extent. Any good that has been accomplished will be speedily counteracted if retail dealers make a practice of informing their customers that they may expect checks and open joints on pieces that have been veneered. What is worse the statement was made by the manager of a large store who should have known better. If this attitude is prevalent among furniture retailers there is plenty of scope for some real educational work to drive home the merits and serviceability of well made veneered furniture.

Checks Can Readily Be Prevented

The suggestion that checks and open joints cannot be avoided when an article is veneered, is entirely wrong and misleading. The causes of checks are known and they may readily be prevented. That this is so may be demonstrated by an examination of veneered furniture made by a manufacturer who is proud of his reputation and product. Such veneered furniture will present, smooth, flat surfaces, free from checks and other imperfections. What can be accomplished in one plant can surely be accomplished in another. If a manufacturer finds it difficult to make dependable veneered furniture with the equipment on hand he should either add what is required in the way of equipment and improve his methods or change to a line of solid furniture. Checks may usually be laid to one of the following causes: Faulty veneer, veneer laid with wrong side out, stock not dry at time of laying, too much time between the application of glue and the application of pressure or checks caused by too rapid drying of the veneer itself or of the glued-up panel. The most probable cause for the trouble outlined is moisture in the veneer, either due to laying veneer that was not dry or because of moisture that was picked up after the glue was applied. Whatever the cause, the remedy in each case is obvious and does not present any insurmountable difficulties.

Stock Must Be Well Dried

The same holds true with regard to open joints in veneered surfaces. The most common cause for open joints is shrinkage of the surface stock as the excess moisture in the face material is eliminated. The remedy lies in making certain that the veneer is well dried before laying and that pressure is applied quickly. It is true that the face veneer continues to absorb moisture after pressure has been applied but pressure tends to prevent the stock from swelling.

Drying the face stock does not prevent any difficulties. It may be done in a hot plate redrier, between hot wood cauls or in a veneer or panel drying kiln. The latter method seems to be finding favor because the final moisture content is then under close control and there is reasonable assurance that all the pieces have been dried to the desired point. Some manufacturers have adopted the idea of drying the veneer in a kiln as it is received from the shipper, and then storing the dry stock in racks in a room in which both temperature and humidity are under control. This results in flat dry stock and the material is always in condition for laying, thus avoiding the delays which sometimes occur when the veneer must be redried before laying.

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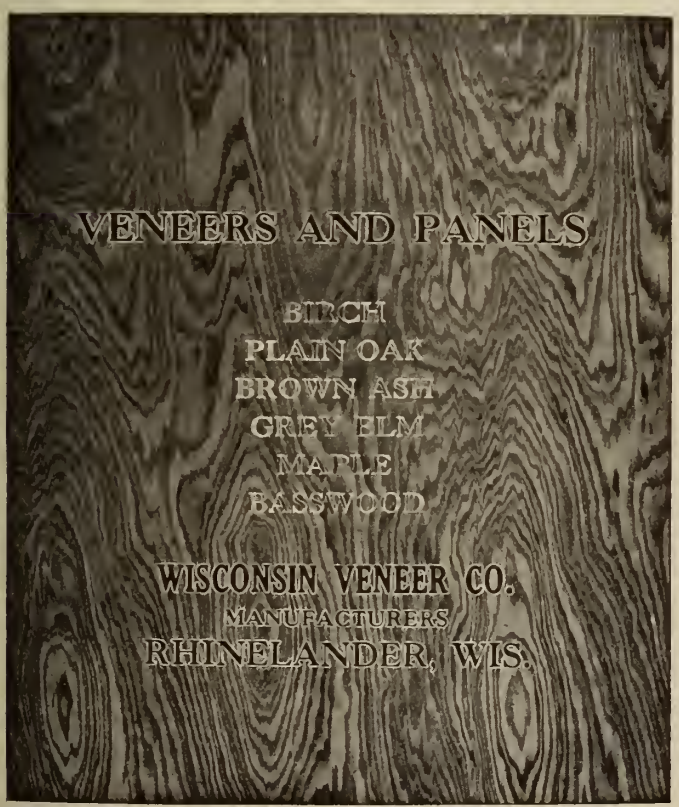

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(When writing mention Canadian Woodworker)

Plywood Panels in Strong Demand

Used Largely in Furniture, Office and Bank Fittings—Increasing Quantities Being Used by Building Industry—Many Untouched Markets Await Development

By M. N. W.

When glued with waterproof glue it is claimed that plywood is almost impervious to water and dampness, that it will not swell or shrink to any marked degree and that it can be depended upon to lay flat with little buckling or warping. The day is not far distant when this material will be used for exterior use as well. Even the cheap soft woods, hemlock, spruce, cotton-wood and fir, and the common hardwoods such as birch, beach, maple and alder show wonderfully varied and beautiful grains when cut in the rotary veneer machine. Any of these woods stain nicely and when properly filled and varnished are adaptable for interior finish for even high class homes. One desirable feature with this style of interior finish is its lasting qualities. A room paneled and ceiled with this material will stand up without much deterioration, as long as the building lasts, a little furniture polish, applied now and then will keep it "spick and span" for long period.

So dependable and strong is the plywood that auto wheels are now being made using layers of thin veneer, one over the other, with the grain alternately crossed and glued up with waterproof glue. The twelve veneers are placed between two hot plates, curved and shaped to give the wheel strength and resiliency. The pressure applied is extremely high, resulting in a wheel one inch thick weighing about the same as an all disc wheel and many times as strong. This is easily understood when it is remembered that plywood was found to be extremely practical for making parts for flying machines, because of its lightness and great strength. Someday in the near future railway cars will be rolling on plywood wheels.

Plywood panels are now in extensive use, with a fast growing market, and those who expect to build in the near future, should make enquiries and investigate the utility and beauty of this material for interior finish.

The logs used in the manufacture of veneer for plywood panels, vary in size from two to six feet in diameter. They are cut to different lengths by a drag saw after they arrive at the plant. Various lathes are used, taking lengths between centers of from one to twelve feet. After the bark is removed the logs are dropped into hot water vats where they remain until softened clear through. They are then lifted out, and placed in the rotary veneer lathe. If you will take a roll of paper and start to unwind it, parting it into squares as you go along, you will better understand what happens when the log starts to revolve in the lathe. An immense, keen knife cuts off a continuous slice of even thickness without break or end until the logs become quite small, just as you would unwind the roll of paper to a finish, but as the machine delivers this thin slice, another machine known as a clipper parts it into the various widths desired, usually from four to ten feet. This material is often passed through a large mechanical dryer, possibly one hundred feet long, sometimes travelling this distance several times and then being discharged perfectly dry and straight.

It then passes to the glue room where it is run through a glue spreader, receiving an even coat of hot glue on one or both surfaces. The sheets that are glued are laid one over the other, in multiples of three or five or more and between each lot a hot plate is usually placed. When a stack two or more feet in height is ready it is placed in an immense and powerful press, which with great force presses the lot together, forcing the glue into the fibres of the wood, the surplus being squeezed out over the edges. When taken out of the press they are dried or allowed to dry and then passed along to the trimming room to be cut to the required lengths and widths, scraped, sanded and made ready to be shipped.

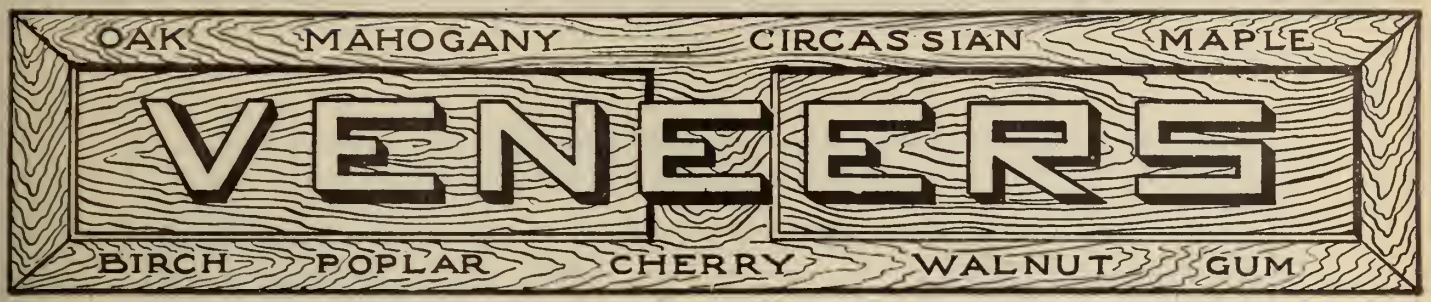
It would take a great many pages to fully describe all the appliances used in the process from the log to finished panel, as many veneer plants are quite extensive often ranging in cost, depending on output desired, from one hundred to three hundred thousand dollars. All possible and known saving devices are usually found, such as air hoists, continuous live rolls, overhead travelling cranes, factory trucks and hoists. The material often travels forward all the way to the shipping room with no back tracking. Clippings, waste pieces from lathe and trimming room, fall on conveyors, which carries them to a machine called a "hog." This machine cuts and crushes big and little pieces up into shavings, which are passed along to the furnaces, under the steam boilers. The exhaust steam from the engine is usually used to keep the water vats hot for softening the logs.

It certainly is extremely interesting to follow the various operations through which the veneer and plywood passes before it is ready for crating and shipping. Unusual care is required at each move to ensure straight, dependable stock.

Importance of Design

In the furniture business, recently remarked a retail dealer, good merchandise consists of good design, good workmanship, good materials and good finish. Design he places first, as clumsy, gingerbread or incongruous designs make the furniture worthless even if everything else is good. Workmanship comes next for no matter how beautiful the design is, if the piece shows defects, it cannot give service and its beauty is wasted. He places materials next in importance. With proper design and honest cabinet work it is no less than a crime to waste them on inferior materials. The famous sculptors used marble and bronze for their masterpieces, not putty or wax. The figures moulded of wet sand at the seashore pleases the crowds today but are gone tomorrow. Finish is placed last among the fundamentals of good furniture although its importance is realized.

Has the best circular saw guard been devised? Several are excellent, yet even the best does not give complete protection to a careless workman.



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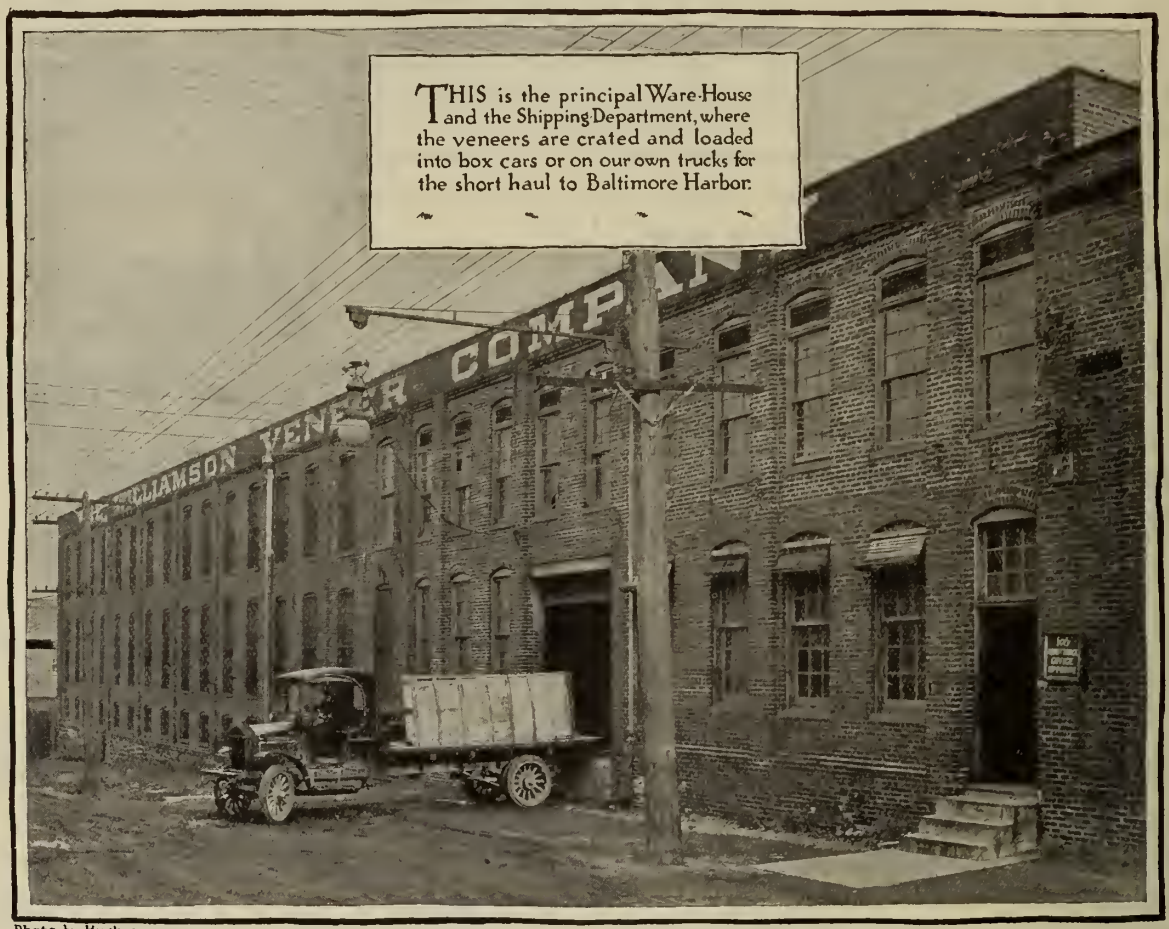

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Starved Glue Joints

Many failures in glued-up wood are caused by "starved" joints, or joints in which the film of glue between the wood surfaces is not continuous. Such joints, according to the Forest Products Laboratory, Madison, Wisconsin, are not necessarily the result of a lack of glue spread on the wood; heavy spreads are as likely to produce them under ordinary commercial conditions as light spreads. They are caused rather by the application of pressure to the joint while the glue is too fluid.

Starved joints are more likely to occur with glues of low viscosity, such as warm animal glue and most blood albumin glues, than with casein, vegetable, and other thick glues.

Some woods are mose susceptible to the production of starved joints than others. Birch, maple, red oak, and ash, which have open pores, absorb glue from the spread in such considerable amounts that they often leave the joints starved. Basswood and yellow poplar also take up a great deal of glue, but weak joints are not very noticeable in these woods because the woods themselves are weak. Other woods with similar cells open to the gluing surface do not seem to be subject to starved joints.

To avoid starved joints it is necessary to mix a glue solution thick or allow it to thicken on the wood from drying or chilling before pressure is applied. When it is necessary to glue under conditions which might produce starved joints, the use of light pressure is advantageous.

Abbreviations Common in Woodworking

(Continued from page 64)

Prod. Production. Also **Prod'n.**
Qtd. Quartered—when referring to hardwoods. Also see **V. G.**
rdm. Random.
res. Resawed.
Rfg. Roofing.
Rfrs. Roofers.
rip. Ripped.
r. l. Random lengths.
rnd. Round. Also **rd.**
R. Sdg. Rustic siding.
r. w. Random widths.
S&E Surfaced one side and edge.
S1E Surfaced one edge.
S2E Surfaced two edges.
S1S Surfaced one side.
S2S Surfaced two sides.
S1S1E Surfaced one side and one edge.
S2S1E Surfaced two sides and one edge.
S1S2E Surfaced one side and two edges.
S4S Surfaced four sides.
S4SCS Surfaced four sides with a calking seam on each edge.
S&CM Surfaced (one or two sides) and centre matched.
S&M Surfaced and matched; i. e., surfaced one or two sides and tongued and grooved on the edges. The match may be centre or standard.
S&SM Surfaced (one or two sides) and standard matched.
S2S&CM Surfaced two sides and centre matched.
S2S&M Surfaced two sides and (centre or standard) matched.
S2S&SM Surfaced two sides and standard matched.
Sap. Sapwood.
SB Standard bead.
Sd. Seasoned.
Sdg. Siding. Also **Sidg.** and **S/G.**
Sel. Select.
S. E. Sdg. Square-edge siding.
s. f. Surface foot; i. e., an area of one square foot.
Sftwd. Softwood.
Sh. D. Shipping dry.
Ship. Shipment or shipments.
Shlp. Shiplap. Also **S-L** and **S/L.**
s. m. Surface measure. Synonymous with face measure **(f. m.).**
SM Standard matched.
smkd. Smoked (dried).
smk. stnd. Smoke stained.
s. n. d. Sap no defect.
snd. Sound.
sp. Square.
Sq. E&S Square edged and sound.
Sqrs. Squares.
Std. Standard.
stnd. Stained.
stk. Stock.
stp. Stepping.
S. W. Sound wormy.
T&G Tongued and grooved.
TB&S Top, bottom, and sides.
Tbrs. Timbers.
V1S V one side, i. e., a longitudinal V-shaped groove on one face of a piece of lumber.
V2S V two sides, i. e., a longitudinal V-shaped groove on two faces of a piece of lumber.
V. G. Vertical grain. Synonymous with edge grain **(E. G.)**, comb grain **(C. G.)**, quarter-sawed **(Q. S.)**, quartered **(Qtd.)**, and rift-sawed **(R. S.).**
w. a. l. Wider, all lengths.
Wth. Width.
wdr. Wider.
Wgn. Wagon (stock).
wt. Weight.

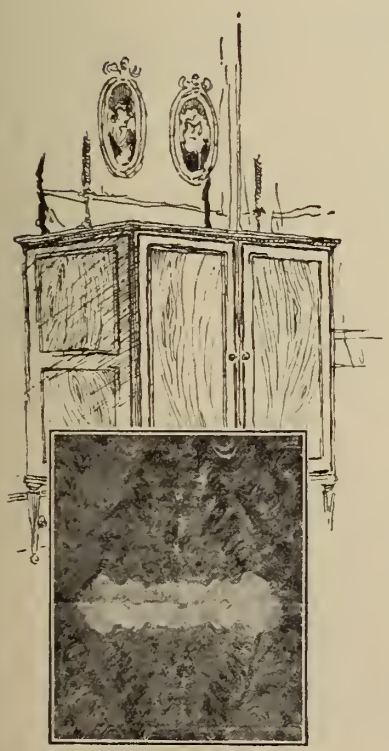
Put the Lid on

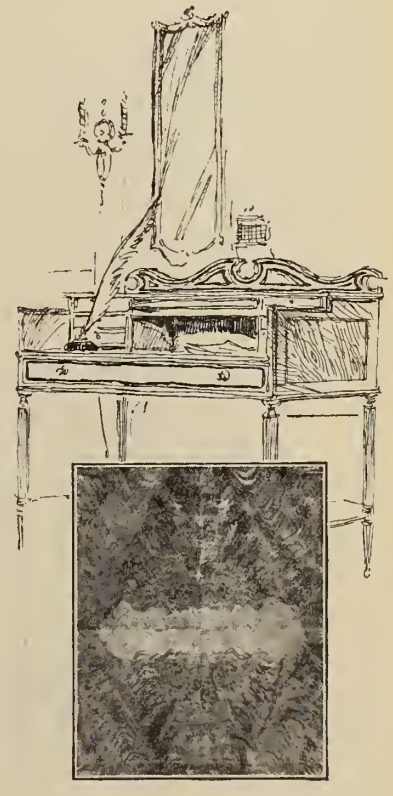
Following the move to put some form of embargo on the export of Canadian pulpwood, our U.S. neighbors are pretending to be very much put out at what they are pleased to suggest would be an unfriendly act. Such an interpretation cannot be considered seriously unless it can be judged unfriendly to lay claim to what is one's own. We are simply minding our own business, and the reason it is causing comment is that we have delayed overlong to do this. Not only should our pulpwood be manufactured into its final product before leaving Canada, but the same should apply to all our raw materials—our timber, our minerals, our wheat, our waterpowers. We are simply playing into the hands of national commercial competitors as long as we fail to do this. If foreign capital prefers to manufacture its own finished products there is no law against its coming into Canada and doing so.

Are we afraid? Must we admit that we have all the essential resources for a great country except "backbone." The decision rests with our Dominion Government to-day.

VENEERS THAT TALK

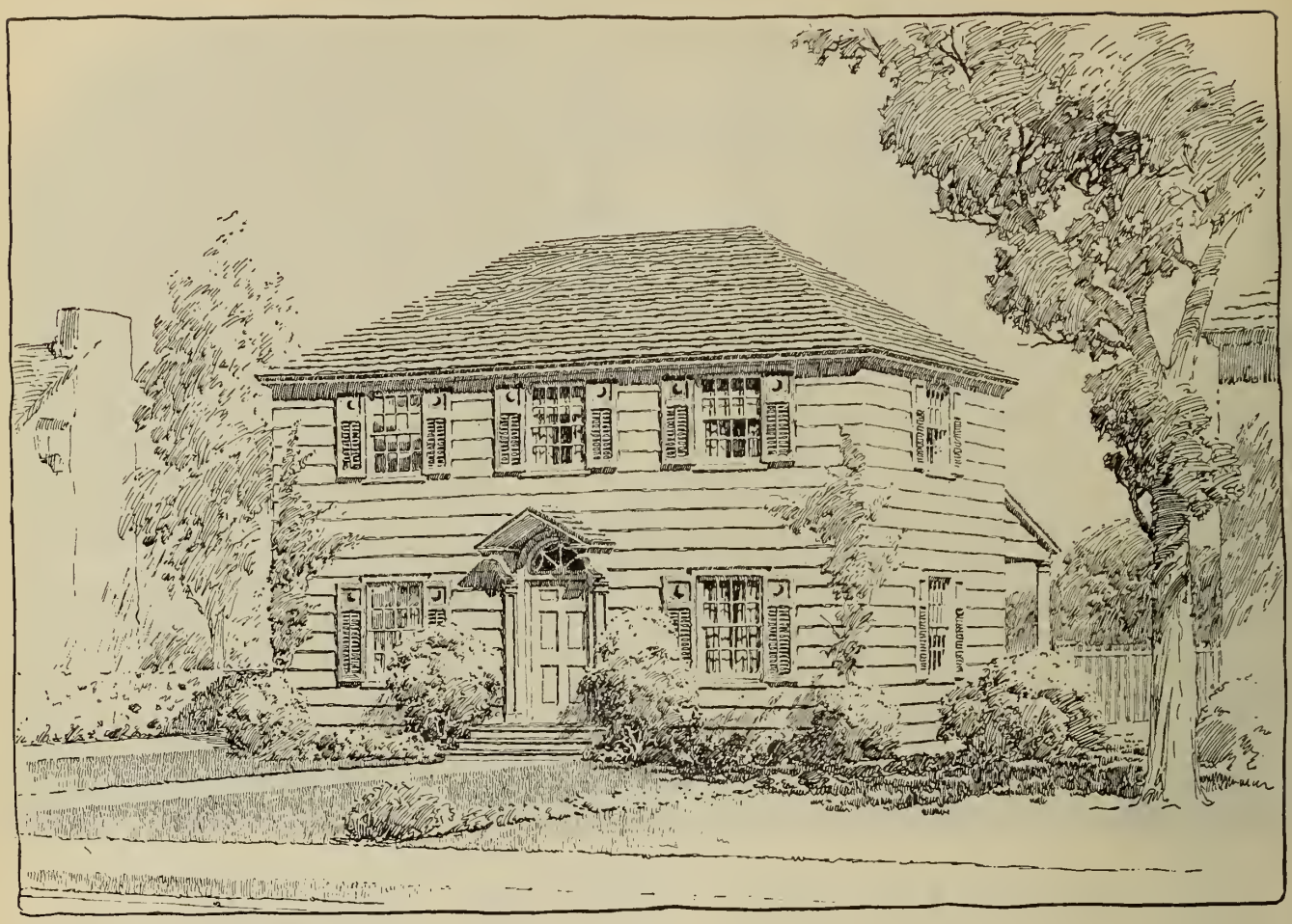
Exquisite feathery figures flecked with changing tones and tints that fairly speak, inviting you to linger and enjoy! Glowing with life and color, soft and shimmering as moire, W M Veneers tell a story of imperishable beauty. *It is yours to perpetuate in richly paneled rooms and rare furniture.* Because of our extreme care in cutting, trimming, drying and packing under pressure, W M Veneers are not only most beautiful but, since every inch of them is usable, they are actually most economical.





Wood-Mosaic Company, *Incorporated*
Louisville, Kentucky

W M
Veneers



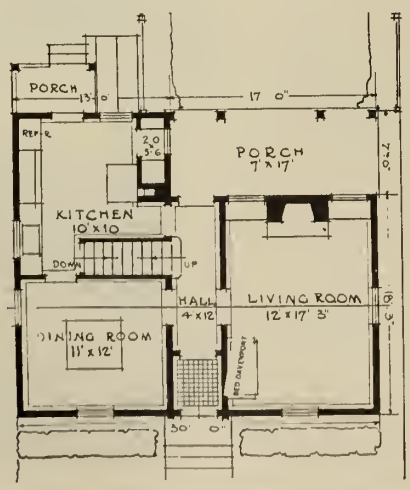
Attractive House of Colonial Type

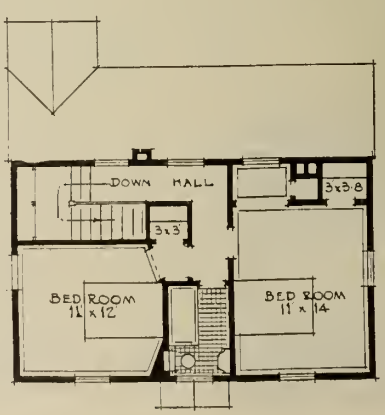
Wide Siding Used to Good Advantage—Embodies Number of Desirable Features

A house combining all the beauty and dignity of the Colonial type of architecture is presented herewith on this page. The house is built of wide siding and in its soundness and economy of structure and its perfection of interior planning it preserves all of the best qualities of that early period of building. According to estimates of the Home Owners' Service Institute, the cost of this house should be between $7,000 and $9,000.

The floor plans are so drawn, as may be seen from the accompanying sketches, as to simplify greatly the problem of enlarging the house later on should that be desired. In all considered modern designing the possibility of enlargement should be considered orignially and it is a decided advantage to work from plans where this has been done.

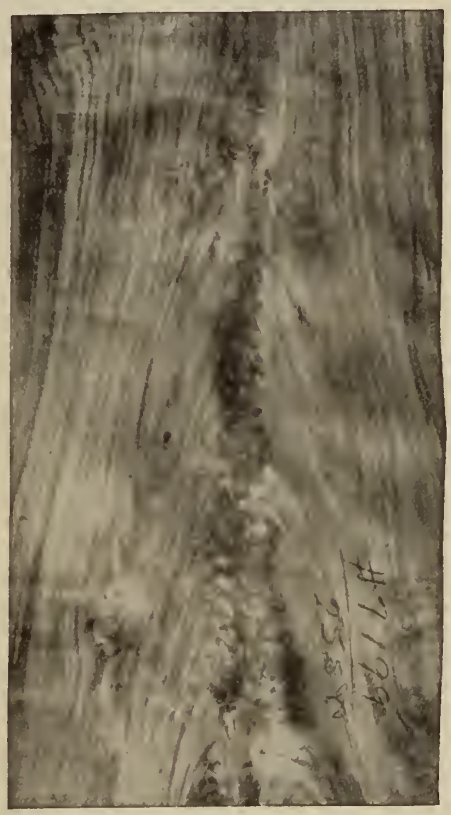
The location of the living porch in the rear of the house instead of the front is in conformity with the modern architectural trend. More and more of the better homes are being designed so that this feature of the house is kept away from the dust and noise of modern automobile traffic.





C. L. WILLEY COMPANY

The **Largest Veneer Plant** *in the* **World**



TAKE a microscope or reading-glass and examine a sample of WILLEY'S beautiful Veneer, which we will send at your request. The stronger your lens, the more interesting the veining becomes. Speaking "in lighter vein", if you ask WILLEY for Veneer, for any purpose, you shall not ask in vain.

Veneer and Lumber

Walnut
American and Circassian
Mahogany
Quartered Oak
English Oak
Satinwood
Vermillion
Teak
Rosewood

And Many Other Foreign and Domestic Woods

2547

Veining in Veneer

BLUE veins, shining through the transparent skin of a baby's forehead—on the slim wrist of a girl—or on the trembling hands of the aged—are held sacred by us all because they carry the warm stream of life. Until three centuries ago is was universally believed that veins held all the supply of blood, and that the arteries ("air-teries" as it was then pronounced) were filled with air.

Our knowledge of the tortuous veins in beautiful Veneer is still far from being complete. Some of the lines which combine to form the fascinating patterns in woodwork consist of real sap-channels, while others indicate years of growth, or the location of branches, or the struggles of the tree against adverse conditions. Every line in the pattern has a meaning, if only we could understand its language.

C. L. WILLEY COMPANY

2558 South Robey Street
CHICAGO

J. SMITH,
Sales Representative
216 Mead Building, Rockford, Ill.

EARL VAN,
Eastern Sales Representative
Everett Hotel, Jamestown, N.Y.

Is the Present a Good Time to Buy Lumber?

Imformation from Producing Centers Covering Various Woods—Indications Suggest Higher Values this Fall—Speculative Buying Being Indulged in to Some Extent

In order to give our many readers information what will assist them in sizing up the lumber market and in making lumber purchases and also to be able to present a comprehensive and authoritative review of the current lumber market, the Canadian Woodworker got in touch with representative lumbermen in different producing centres and has secured from them first hand information based on their knowledge of the activities and fluctuations of the lumber market. Some of the replies received follow:

Walnut Market

"The decrease of sales of the furniture manufacturer during June and July caused a noticeable decrease of walnut lumber buying during the month of July. This applies to the grades of walnut lumber used by the furniture trade, but apparently the furniture orders that were held up are now being placed with the factory, as a noticeable increased demand was felt during the past week.

"Walnut lumber stock in the hands of the factories average low, while the lumber on the hands of the walnut mills was the lowest on July 1st of any time during the past ten months and most of the mills, even at the present time, find their stocks badly broken, and it would take several weeks to balance their stocks.

"The supply of logs on hand has steadily decreased since March and there is little hope of increasing these quantities to a point of having a surplus of logs until November, or until the farm work is completed. The greater portion of the walnut timber grows in the farming sections of the Mississippi Valley, and is owned by farmers. These people do not desire to have their walnut cut during the grass season as the tops interfere with grazing. Further there is not much prospect of cheaper logs this autumn, as the labor in the country will not be secured at less price and labor is a large factor, together with the freight cost, in the cost of walnut logs.

"The building, or interior woodworkers, are using greater quantities this year than heretofore, and the demand for walnut for specialities is unusually heavy.

"As walnut lumber during the past six months experienced the smallest percentage of increase in price compared with other hardwoods, we think the trade need not expect any noticeable decrease in present prices. July has been the first month during the last ten that the mills cut more lumber than was shipped, and indications are that the demand of the last few days will again permit the mills to ship as much as they manufacture, during August, still leaving their stocks unbalanced."

Gum Market

"The demand for Gum in certain items, such as 8/4 Common and better Quartered Sap Gum, 5/4 and 6/4 Common and better Quartered Sap Gum, is fully as strong today as it was 90 days past. The demand for Plain Red Gum and Quartered Red Gum is rather slow and sluggish, but we do not believe there are any great stocks of these items in the country.

"Owing to the usual slack in business during July and August, which invariably comes at this season, there has been a slight recession in prices; probably not over 5%, however; and we are convinced that prices will remain firm and get stronger during the fall and winter. In other words, we are very optimistic as to the future, as our volume of business in Quartered Sap Gum and Elm, and other woods, has been exceedingly good, and far in excess of any summer business we have experienced in the past.

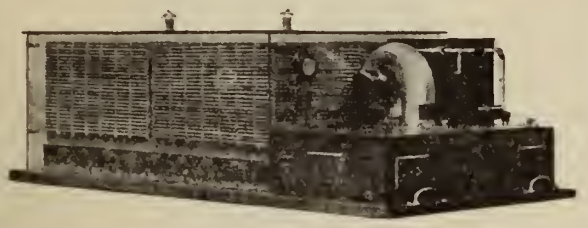
The same conditions hold true in another gum producing centre as will be noted from the following: "The present presents a most peculiar situation with regard to current prices. As compared, for instance, with prices prevailing on January 1st, 1922 we find an increase in the Common and Better grades of Sap, and no defect, of from 25% to 75%, and we find almost the same decrease per M ft. in the prices of the red grades, so that the average return to the manufacturer (and it is the average sales value that determines the loss or profit) has not increased in proportion to the cost of production.

The present stocks in the Sap, and Sap no Defect, grades are scarcely adequate to meet the existing demand and much lumber is being shipped in these grades which is really not in proper condition for dryness.

There has been a rather abnormal stock of the red grades, but due to the extremely low prices that have prevailer the demand has been stimulated and this surplus is being rapidly reduced. Red Gum at the present price levels offers an excellent speculative opportunity, and it is our opinion that there has been more or less speculative buying in these grades.

As to the probable future price tendency, looking some distance into the future, prices unquestionably must show a material advance. We say this because the lumber cannot be produced at the present price, and because present stocks are really sub-normal, and the period of reduced production is not far ahead of us. As to the immediate future, in our opinion, this depends entirely on general business, and the demand there is for lumber. With a demand 75 or 80% as great as that experienced during the early months of this year, prices will show a gradual strengthening, but if the demand continues on the present basis there will be no further advances. There may be, in some instances, even slight declines, but this situation must eventually be followed by very much higher prices.

The situation is most discouraging to the manufacturer of lumber who keeps an accurate account of his costs, for while labor costs in this section are still considerably below the prices prevailing in the large industrial centres there has been an average increase in the wage scale of pretty close to 100% in the last two years. There seems little opportunity to reduce this labor cost because of the exodus of our labor to the Northern and Eastern industrial centres, to which they are attached by the higher wage scales in effect. This has made labor extremely scarce



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Circulation
Temperature
Humidity

These are the accepted prime essentials of quick, efficient and economical drying. Sturtevant High Humidity Dry Kilns combine them all.

Write for folder 602 which contains interesting general information, and a scientific analysis of this subject.

B. F. Sturtevant Co.
of Canada, Ltd.
Montreal Galt Toronto

Sturtevant
PUTS AIR TO WORK

The Sidman Lumber Curing Process

IN

Either Wood, Brick or **Concrete** Building.

Fillers and glazes to preserve the building.

The TAG-ROESCH **Automatic** Time-Temperature and **Humidity Controller.**

Three-ply and Du-o-fold Army Duck Curtains, and Hussey Door Carrier Doors.

Automatic Heating, Ventilating and Humidity Systems for Varnish Rooms.

Reducing the Back Pressure Valves, Oil and Grease Extractors.

Sidmans AUTOMATIC **Suction System** for returning ALL Condensation DIRECT to the Boiler.

Cantilever Steam Traps and other Steam Specialties.

Active and Non-Down Draught Vent Heads for all purposes.

Cleanable Screen Panel and Window Ventilators.

Roller Bearing (Ott) **Channel Iron** Car Bunks and Transfer Cars.

Thermostats, Recording Gauges, and The Sidman Special Hygrometers.

For Description and prices, write

The
Sidmans of Canada

Heating and Ventilating Engineers and Lumber Curing Specialists

LONDON THE SIDMAN LCK Reg Trade Mark **ONTARIO**

throughout the Southern producing field and there is small opportunity for any reduction in labor costs, even if this were desirable.

There has been an average decline in hardwood prices since the early months of this year of somewhere between 20 and 25% and while this decline was taking place, production costs have been increasing. The result is that the lumber now being produced, in fact all of that on hand which has been produced this year will not return the actual cost, at the present prices. The inventories carried over from last year consisting of lumber produced at a somewhat lower cost were largely marketed during the early months of this year, and due to the higher prices then obtainable were sold at a profit.

We have several times experienced a situation exactly like that through which we are now passing, and it has invariably come to pass that by the time the lumber which apparently was produced at a loss was ready for the market, the price has advanced sufficiently to return cost and some profit. We feel that such development is inevitable eventually in the present situation, but there are so many unusual complications that now confront us, such as the tendency of business in general, the chaotic foreign situation and the disturbed political situation in our own country, that we are loathe to make any predictions as to the exact time when prices will advance.

Mahogany Market

"The demand for mahogany lumber and veneer during the year 1923 has been above normal, due to the building revival, the fine furniture demand and the continuous buying in the music field. There has also been a marked return in the fashion for mahogany furniture.

"In the summer months there is a seasonal depression in the demand for all lumber, including mahogany, and mahogany manufacturers have felt this in a measure, though not so marked as in years past; consequently, there has been a slight softening in prices, which, in our opinion, is only temporary, and we are confident of a sharp revival both in demand and prices by the time the fall trade is reached.

"Mahogany stocks in the United States are unusually low. We ourselves have smaller stocks on hand today than any other time during the past six years. There will be good arrivals of logs from Central America. Prospects of large importations from Africa, whence comes most of the stocks used in the manufacture of veneers, are not bright and are looking for a sub-normal importation from that source.

"This fall should witness a steady and healthy demand for mahogany at a fair level of prices."

This outline of the mahogany situation is further borne out by information received from another source, as follows:

"During the past six to nine months, there has been a considerable stiffening in the demand for mahogany lumber and veneers. While the present demand is slightly less than existed three months' ago, it is still very satisfactory and the industry seems on a sound basis. We fully expect these conditions to prevail for some time to come, with even a probable increase in demand, as the cool weather of fall approaches. Stocks of mahogany in the United States are fair, but are not as great as were in hand some months' ago, due to the above mentioned increase in demand and consequent shipment of material. We see no reason for any price changes, because the differential between mahogany and other cabinet woods is probably less today than it has been for a number of years."

Oak Market

Going back to the beginning of the year, most mills were shipping oak with other lumber much faster than they were producing it. The majority of the consumers were probably increasing their stocks for the first four months: then most of them decided to stop buying and since that time are only buying for their immediate requirements and are naturally reducing their stocks on hand.

Business should continue reasonably fair for the balance of the year, and it would not have to be as good as the first six months to again bring buyers into the market. The mills have not been able to make as much lumber in the last three or four months as they usually do, especially in the South as the spring rains were heavier than usual, naturally curtailing logging and in our opinion, there is not a normal stock of lumber on hand at this time.

During the latter part of last year and the first three or four months of this year, commodity prices were advancing from time to time and were probably getting a little abnormal and there was some danger of prices going too high and wages increasing too rapidly: however, within the last two or three months these things have been pretty well safe-guarded and this danger eliminated.

The demand for oak has been very satisfactory and our July shipments were really better than we expected, as we always look for dull business during July and August. Inquiries are fair and we have every reason to believe that business of all kinds is on a conservative basis and that the remainder of the year will close very satisfactorily.

It will be seen from these representative letters that the hardwood market appears to be particularly strong, that the demand is holding up to a large extent and that while small price concessions have been made on a few lines the general tone of the market is firm, with the probability of a slight stiffening in values. In the face of this it would appear that the present is a good time in which to buy. The conclusion is further strengthened by the fact that there is a certain amount of speculative buying being done, due to a belief that hardwood lumber values may show a decided increase. In any event it is extremely unlikely that there will be any decline from present levels while higher values are anticipated.

What has been said of American lumber holds true with regard to Northern woods. Stocks of such woods as birch and maple are low and while the usual mid-summer lull is being experienced it is anticipated that when the fall demand makes itself felt there will be a stiffness of values. Those who have stocks of these woods are inclined to hold for the fall market rather than make price concessions to move their stock at the present time.

Produces Artificial Wood

By using a mixture of 50 per cent. sawdust with chalk and chemicals, and subjecting these to very heavy pressure, a scientist of the Kullebund says he has succeeded in making "artificial wood," possessing all the qualities of genuine timber. Its specific gravity is the same as wood, its hardness the same as oak. It can be planed, sawed, bored, nailed, painted, stained or polished, and submitted to every process of carpentry or manufacture to which real wood is subjected.

Dust and Refuse Collector

"35 yrs. without re-babbitting at LEAHY MFG. CO. and still in good shape

is the operating record of a Canadian Planing Mill Exhauster just received.

Whether durability and few repairs or good design and power economy appeal to you—you can combine both by using Canadian fans.

Be sure to specify Canadian Exhausters when ordering through your contractor.

Canadian Blower & Forge Company, Limited

Kitchener, Ont. - - Canada

Toronto, Montreal, Calgary, Vancouver, St. John, Winnipeg.

Canadian Planing Mill Exhauster

"Well Bought is Half Sold"

"O, Come! All ye Faithful!"

And let us tell you about our Specially Assorted Shop and Dressing Stock put up for people who appreciate the Exceptional

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Canadian General Lumber

Company Limited

FOREST PRODUCTS

TORONTO OFFICE:—
1005 Federal Building

Montreal Office:—514 Canada Cement Company Building

Mills: Byng Inlet, Ont.

News of the Trade

The Elmwood Box Factory has been registered at Winnipeg, Man.

J. & C. Hickman, Port Elgin, N. B., recently added a 6 in. band resaw and a double surfacer

The Flint Varnish & Color Co., Perth Ave., Toronto, are making alterations to their factory at a cost of about $15,000.

Hugh Reid, of Laminated Materials, Limited, New Westminster, B. C., was in Toronto recently calling upon the trade.

Wm. Cawkell, Secretary-Manager of the Furniture Manufacturers' Association, Toronto, is enjoying a well earned holiday.

The woodworking factory of J. W. Stephens, Sydney, N. S., was destroyed by fire recently, causing an estimated loss of $4,500.

The Master Manufacturing Co. Ltd., Toronto, was recently incorporated to manufacture and deal in all kinds of household novelties. Capital $40,000.

The Office Specialty Manufacturing Company, Limited, Newmarket, Ont., have been granted supplementary letters patent to increase their capital to $1,000,000.

Simplex Auto Wheels, Limited, Toronto, is a new company recently formed to manufacture and deal in all kinds of wooden wheels. Capital $500,000.

There have been a few changes in the organization of the Novelty Reed & Rattan Company, of Kitchener, Ontario, B. Joseph having joined this organization.

M. A. Pratt, Limited, Montreal, is a new firm recently formed to manufacture and deal in pianos, phonographs and furniture. Capital $100,000.

The plant and premises of the Ledoux, Jennings Carriage Co., Montreal, P.Q., was totally destroyed by fire recently. The loss is estimated at $500,000.

It is reported that the Ottawa Car Manufacturing Company, Limited, of Ottawa, Ontario, are contemplating moving their plant from Ottawa to Hull, P.Q.

The Chester Cabinet Works, 155-7 Morrison Ave., Toronto, is a recent registration. A. C. Smither and John S. Pearson are the two principals.

The name of the Oakville Wire Bound Box & Basket Co., Ltd., Oakville, Ont., has been changed under the provisions of the Ontario Companies' Act to the Oakville Basket Co., Limited.

F. R. Gilbert, Brockville, Ont., manufacturers of all kinds of boats have started work on a new factory addition. The new unit will be two storeys, 30 x 60, of frame construction and will cost about $6,000.

W. J. Anderson, manager of the Stratford Chair Company, Stratford, Ontario, recently enjoyed a well earned holiday. Part of the time he spent touring the Ottawa Valley in his car.

The furniture factory conducted by Peter Nordby at Bloomfield, N. B., was recently destroyed by fire. The loss is estimated at $13,000. In all probability the plant will be rebuilt in the near future.

The Stone Manufacturing Co., Inc., Binghampton, N.Y., recently issued a circular featuring their line of motor driven, flexible shaft equipment, including drills, grinders, buffers and polishers.

Christmas Ferguson & Co., Limited, Montreal, is a new company recently formed to manufacture and deal in wooden handles, boxes, and all kinds of domestic woodenware. Capital $99,000. W. M. Taylor is one of the principals.

R. T. Hart was recently appointed manager of the Gold Medal Bedding Company, Limited, Montreal. Mr. Hart is well known in the bedding field, having been with the Ideal Bedding Company of Toronto and more recently with Simmons, Limited, at their Winnipeg branch.

The employees of the Buyer's Door and Manufacturing Company, Limited, Pacific Avenue, Toronto, recently held a very enjoyable picnic at Woodbridge, Ontario. The usual forms of out-door sports were indulged in, including a number of burlesque contests. About 175 were in attendance.

Two well equipped woodworking shops have been installed in connection with the Windsor-Walkerville Technical School. At the present time W. B. Lowe, the Principal, is on the lookout for a practical man to take charge of the instruction in the woodworking department.

The Furniture Club of America was recently organized and has secured space in the Furniture Mart Building, Chicago. The membership is open to furniture manufacturers, salesmen furniture dealers and others interested in this industry.

Shelvin, Carpenter & Scanton & Company, Limited, Winnipeg, Man., was recently organized with a capital of $4,500,000. The company will conduct a general lumbering business, manufacturing and dealing in all kinds of forest products.

The Dick Carew Lumber Co., Limited, Peterboro, Ont., is a new firm recently formed to manufacture and deal in sash, doors, mouldings, flofloring and other wood products. Capital $50,000. Alex Dick and Frank Carew, both of Peterboro, are two of the incorporators.

J. M. Card Lumber Co., Memphis, Tennessee, have obtained a supplementary license in Ontario permitting a capitalization of $75,000 to manufacture and deal in all kinds of wood products. The Canadian office of this company is at Kitchener, Ont.

The broom and bed spring factory formerly conducted at Owen Sound by J. C. Sloane has been taken over by Messrs. Strang & Johnson and will be operated along the same lines as formerly. The new proprietors report a number of orders on hand.

Malcolm & Hill, Limited, Kitchener, Ontario, are taking advantage of the Made-in-Canada train that will tour France this sumer and are making an exhibit of some of their furniture. It is anticipated that this display will arrive in France in the near future.

The Canadian Toreadors is the name of a new organization recently formed among the paint, oil varnish, glass and brush trades. The idea behind this movement is to create fellowship and promote friendship among those engaged in these fields.

Haileybury Lumber Co. Ltd., Haileybury, Ont., was recently incorporated to operate planing mills and manufacture all kinds of wood trim. Capital $100,000. M. J. Conkey and G. F. Summers, both of Haileybury, are two of the incorporators.

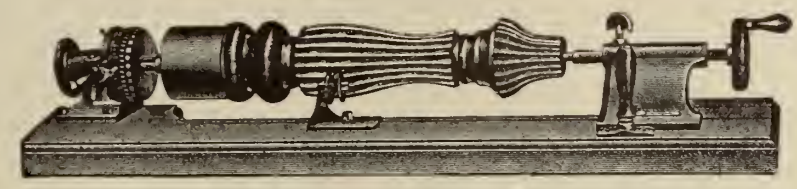
The two story planing mill of the Mickle Dyment Company, located at Brantford, Ont., was recently destroyed by fire. An explosion of unknown origin, which did considerable damage in that neighborhood, is given as the cause of this blaze. The loss is over $250,000.

The planing mill at Blyth, Ont., operated by Cockerline and Floody, recently fell a prey to flames. The loss is given at $10,000 with $2,000 insurance. Mr. Cockerline states that a definite decision has not been reached with regard to rebuilding.

Damage estimated at $125,000 was incurred recently by a

FLUTING HEADS

Shaper Attachment



For fluting Table Legs, Chair Legs, Bed Posts, Columns, Balusters, etc. Swings any diameter up to 8" and may be extended to any length. Spaces automatically number 1 to 48. Ask for circulars of Fluting Heads, Twist Machine and Twist Sander.

THE SHAWVER CO., SPRINGFIELD, O.

Canadian Representative:
The A. R. Williams Machinery Co., 64-66 Front St. West, Toronto

Worth Its Weight in Gold

"The Automatic" Sprinkler

Woodworking plants are much more susceptible to fire than the average building. Their contents are such that when a fire starts, it must be brought under control immediately to prevent a general conflagration.

That is exactly the job of the "Automatic" Sprinkler.

Write us for full details.

The Bennett & Wright Co.

Limited ——— Contractors

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Western Ontario Branch

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Bond POWER TRANSMISSION

comprises

Hangers with Babbitt, Ball or Roller Bearings
Pillow Blocks
Flat Boxes
Mule Stands, Wall Boxes, Spiro Compression Couplings, Clamp Couplings.
Plate and Sleeve Couplings
Cast Iron Pulleys
Solid and Split Collars
in fact everything
for transmitting Power in Woodworking establishments.
also
Bond Ball Bearing Truck Casters.

For High Speed Machines use the Bond Ball Bearing Loose Pulley. Used extensively on High-Class Woodworking Machinery, it has given the utmost satisfaction. Catalog 38 cw sent on request.

BOND ENGINEERING WORKS,

Villiers and Munition Sts. **Limited**

TORONTO

Finest Quality

Reeds and Rattans

We are now supplying many of the leading Canadian furniture manufacturers with these Chinese, Holland, German reeds and rattans. We can give you the same satisfactory service.

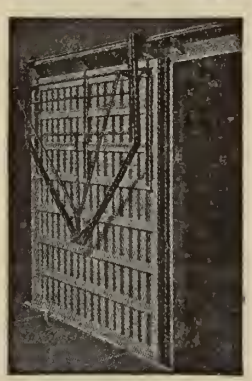
Our other products include: cotton linters and cotton waste.

Prices on request.

E. T. CARTER & CO., LIMITED

84 FRONT ST., E. TORONTO

The Door Carrier System



Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

DRY KILN DOOR CARRIER CO.

1117 Cornell Ave.
INDIANAPOLIS, IND.

fire which destroyed the plant of William Sullivan Ltd., Nelson N. B. The flames were fanned by a high wind and destroyed several buildings as well as from five million to nine million feet of dressed lumber.

Woods Steamer, Limited, Toronto, is a new company formed to manufacture and deal in motor trucks, carriages, motor boats, aeroplanes and other wooden vehicles. Capital $2,500,000. O. E. Woods and G. J. Woods, both of Toronto, are two of the incorporators.

James Davidson's Sons, Ottawa, Ont., who operate a large woodworking plant in connection with their lumber business report that business is extremely good, in fact they have been operating their plant over time and expect to continue overtime work for the next few months.

Pembrooke Shook Mills, Pembroke, Ont., report that they are extremely busy at the present time and that their plant is running to its full capacity. Mr. J. T. Stewart, the general manager, states that from present indications it appears that the plant will be busy for the balance of the year.

Fire recently caused $30,000 damage to the property of Barrett Bros., Ottawa, manufacturers and dealers in wood products. The fire started in a lumber storage shed and consumed a considerable quantity of new mouldings, shingles and lumber. Three motor trucks and some equipment were also destroyed.

The planing mill of the Digby Lumber Co., Lindsay, Ont., was recently destroyed by fire. The damage is estimated at $25,000 and is fully covered by insurance. The equipment, which was modern in every respect, was rendered useless. A spark from a heater used for warming glue is given as the cause.

D. Kemp Edwards, Ltd., Ottawa, Ont., which was organized recently to conduct a general woodworking and lumber business have taken over the George Mason mill property, Ottawa, and are carrying out extensive repairs and improvements. This property includes a well equipped planing mill and sash and door factory and extensive storage buildings.

Pyrene Manufacturing Co., of Canada, Limited have moved their factory from Montreal to Toronto where they have installed a modern plant. In addition to their well known line of Pyrene Fire Extinguishers they will manufacture a foam type of extinguisher to be known as Phomene and Guardene a chemical extinguisher.

A sad fatality occurred at the plant of the Office Specialty Manufacturing Company, Limited, Newmarket, Ontario, when Stephen Doyle, an elderly employee was crushed by one of their elevators. It is not known just how the accident occurred, but it is thought that Mr. Doyle was working beneath the elevator when in some way it fell and crushed him.

E. S. R. Murray recently passed away at his home in St. John, N.B. Mr. Murray, who was a well known figure in the public life of New Brunswick, was at one time actively connected with Murray & Gregory, Ltd., St. John, N.B. During the last few years, due to failing health, he has not been actively connected with the business which bears his name.

The Halliday Co., Hamilton, Ont., who some two years ago opened a branch in Truro, N. S., and under the management of W. H. Faltenhine, report that a good business has been developed by their Eastern branch. C. L. Smith is the superintendent of the plant. The company turn out flooring, doors, sash, in fact all woodwork required for the building of a house.

The Canadian Vickers Ltd., Montreal, recently completed the first hydroplane to be construced in Canada. This is one of six similar machines to be built for the Federal Government for Forest patrol work. The wings and the propellor are of Sitka spruce, while the engine is a Rolls-Royce developing 375 h.p. The cost of this machine is in the neighborhood of $20,000.

The Lantz Furniture Company, Toronto, was recently organized to manufacture a high grade line of furniture and cabinets. They have secured the plant on Maria Street formerly occupied by the Ideal Cabinet Company. W. H. Lantz, manager of this company, is a practical man, having had twenty-two years experience in the construction of furniture.

The Seaman, Kent Co., Limited, Toronto, Ont., recently entertained the members of the Southwestern Ontario Retail Lumber Dealers' Association at their West Lorne plant. After the lumber dealers had been through the plant and the various steps in the manufacture of hardwood flooring explained an open air banquet was served. The members in attendance spent a very enjoyable time.

Lausophe Nault, Daveluyville, Que., recently put in a Yates A 4, fast feed planer and matcher and a Yates 341 band resaw. Mr. Nault has erected a new mill and is developing a fine business in milling-in-transit, having already taken care of large quantities of spruce. He has also built a new power plant.

The Fletcher Lumber Co., of Windsor, Ont., are not erecting a planing mill as has been reported. They are moving a certain portion of the machinery which was not entirely destroyed by fire from the Haugh Company property over to their own plant and are putting it in a workable condition. It is not the intention of the Fletcher Lumber Co. to do a great deal of factory work as they expect to purchase the best part of their stock ready run.

The Annapolis Hardwood Co., Ltd., Annapolis Royal, N.S., have developed a large sales organization to market their line of hardwood flooring. At the present time they have representatives in several cities as follows: Montreal—Henry C. Campbell; Toronto—R. Laidlaw Lumber Co.; St. John, N. B.—Christie Woodworking Company; Moncton, N. B.—Moncton Supply Co.; Truro—Halliday Co.; Sydney—Chappels Ltd.; Dartmouth Lumber Co.; Halifax—Piercey Supply Co.; Kentville Wood Workers.

Angus-Keefer Lumber Co., Belleville, Ont., was recently organized with a capital of $50,000 to take over the plant and business formerly conducted by the Brown-Sword Company. J. E. Angus has had a large experience in the lumber field while A. E. Brown, the Vice-President, has been connected with some of the largest woodworking factories in Canada. The plant is a modern structure and is well equipped. A complete line of sash and doors and other forms of millwork will be manufactured. It might be of interest to note that Messrs. J. E. Angus and N. Keffer acquired the business of the Brown-Sword Co. some five years ago.

The Peterboro Canoe Co., Limited, Peterboro, Ont., and the Chestnut Canoe Co., Limited, Fredericton, N. B., have been merged into a new company known as the Canadian Watercraft Co., Limited. The plan of the new organization is to centralize the manufacture of canoes at the Fredericton plant and to increase the output from 1600 to 2600 canoes annually. The Peterboro plant will be devoted almost exclusively to the manufacture of wooden water craft, including row boats, motor boats, and sailing boats. It is probable that changes and improvements will be made by both the Peterboro and the Fredericton factories. Officers of the Canadian Watercraft Company, Limited, are, W. A. Richardson, Peterboro, Ont., President, W. P. Chestnut, Fredericton, Vice-president, C. H. Rogers, Peterboro, Vice-president, and C. H. Rogers, managing directors, the former being in charge of the Fredericton branch and the latter being in control at Peterboro. The capitalization of the new company is $1,000,000.

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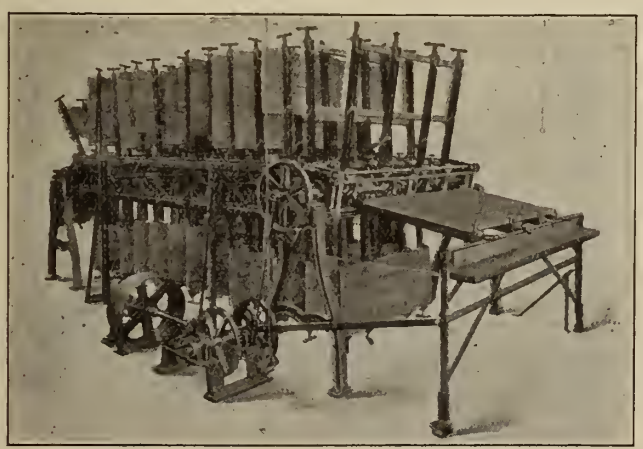

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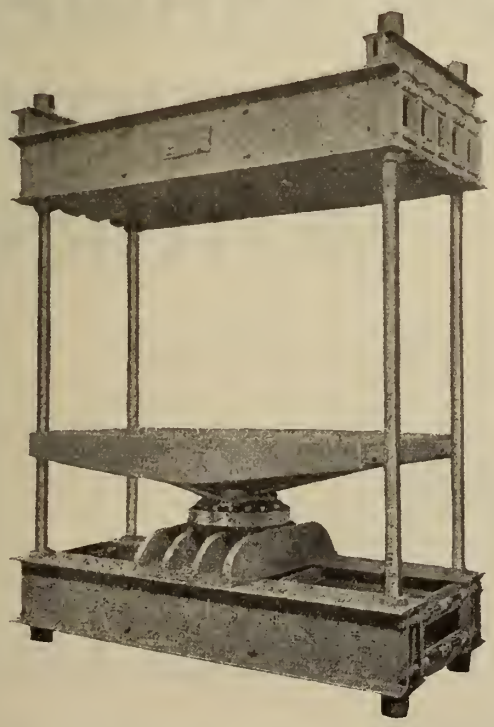

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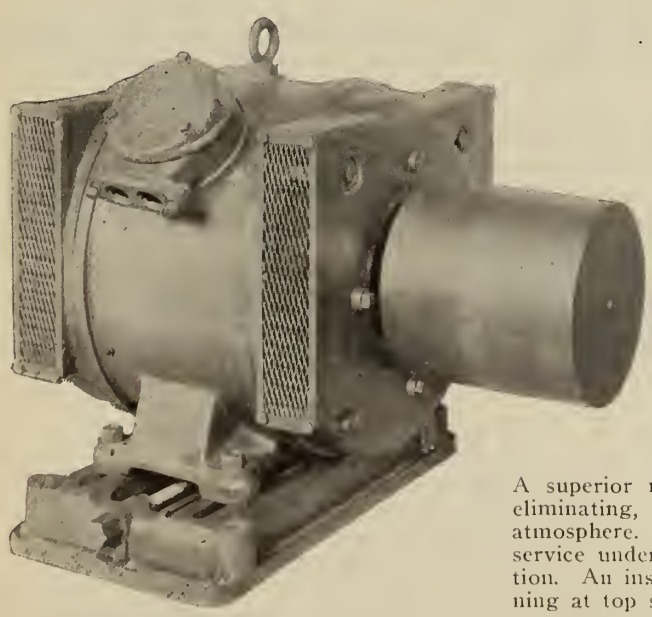

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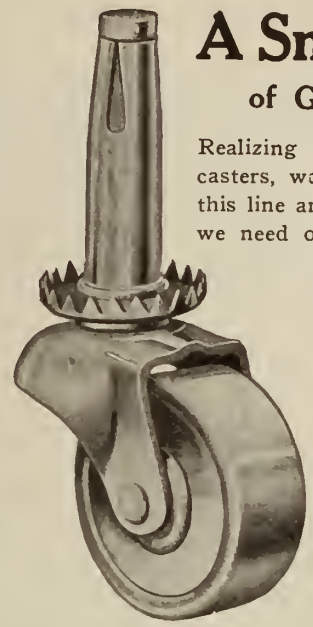
Watertown Table-Slide Company
WATERTOWN, WISCONSIN :-: U.S.A.



No. 5

A Small Article

of Great Importance

Realizing the importance of efficient casters, we have made a specialty of this line and as proof of their quality we need only say that many of the foremost furniture manufacturers are using them exclusively.

By the way don't it seem logical that a Canadian-made caster should be the right one to use on Canadian-made furniture? Assuming of course, that it equals the standard of the imported article?

If you believe so too, just write us for samples and prices

National Hardware Company Limited

Orillia - Ontario

The Hoosier Self-Feed Rip Saw

is now made in eight styles

You will find one of these styles especially designed for your work.

No 1 the well known Standard, rips 6" thick, 17" wide; resaws to 6", adapted to single, gang or bevel ripping; the feed will pull six saws through 1" stock.

No. 2 is the No. 1 machine built with one stationary and one movable saw, which is adjustable while running to the full width of the collar space 8½".

No. 3 is especially designed for short gang ripping and will rip as short as 6½".

No. 4 is the No. 1 but built with a wider frame and has 14" collar space where the No. 1 has 8½" collar space.

No. 5 same as No. 2 and has movable saw, which travels the full width of the 14" collar space.

No. 6 is the same as No. 4 but built with an extension bracket at outer end of mandrel and will rip 24" wide.

No. 7 is the same as No. 1, except that it is built with a third or intermediate feed roll and is especially designed for gang ripping.

No. 8 is the same as No. 4, except that it is built with a third or intermediate feed roll and is especially designed for gang ripping.

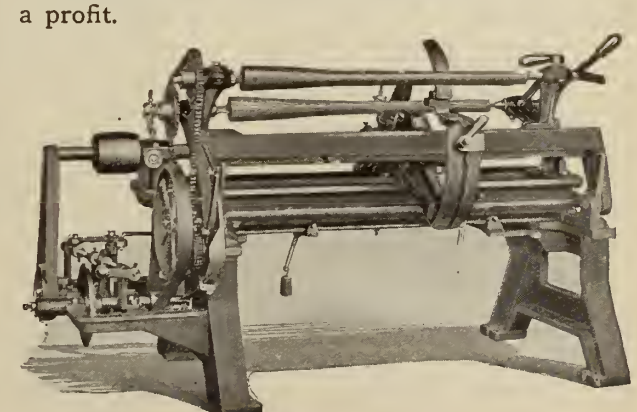
The reliability and efficiency of Hoosier Rip Saws are known to woodworkers everywhere. They are made in the best possible manner.

For further particulars and price, address

THE SINKER-DAVIS COMPANY
Indianapolis, Indiana

MAKE MORE MONEY

from your timber by working it into handles and other turned work. Short and crooked logs, small trees, and other waste material can be worked at a profit.



OBER machines will help you.
We build Turning Lathes, Sanders, Rip Saws, Bolters, Boring and Chucking machines, etc.

SIMPLE, STRONG, DURABLE

Write for free catalogue No. 31.

The Ober Mfg. Co.

Chagrin Falls, O., U.S.A.

Canadian Woodworker" Buyers' Directory—Continued

FIRE EXTINGUISHERS
Pyrene Mfg. Co., Toronto, Ont.

FIRE INSURANCE
Canadian Appraisal Co. Ltd., Montreal, Que.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N. Y.
Herman Behr & Co., Inc., Brooklyn, N.Y.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).
Canada Glue Co., Brantford, Ont.

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GLUE
Canada Glue Co., Brantford, Ont.
Casein Manufacturing Co., New York City
Dunn Co., of Canada, Thomas W. Montreal
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.
Sanderson Pearcy & Co., Toronto, Ont.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

GLUE CLAMP CARRIERS
Nels J. Billstrom, Rockford, Ill.

GLUE HEATERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE JOINTERS
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUED STOCK
Nichols Company, A. S. New York, N.Y.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Simonds Canada Saw Co., Montreal, P.Q.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GROOVERS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Mattison Machine Works, Rochford, Ill.

GUM LUMBER
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Hyde Lumber Company, South Bend, Ind.
Kirby Bonner Lumber Co., Houston, Texas
Merceau-Hawkins Tie Co., Huntington, W. Va.
Sondheimer Co., E., Sondheimer, La.
South Texas Lumber Co., Houston, Texas
Toronto Hardwood Lumber Co., Toronto, Ont.

HAND SCREWS
Fay & Egan Co., J. A. Cincinnati. Ohio.
Superior Hand Saw and Clamp Co., Grand Rapids, Mich.

HANGARS
Bond Engineering Works, Toronto, Ont.
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

HANDLE & SPOKE MACHINERY
Fay & Egan Co., J. A. Cincinnati. Ohio.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Nash, J. M., Milwaukee, Wis.

HARDWARE
National Hardware Co., Orillia, Ont.
Larsen & Shaw Ltd., Walkerton, Ont.

HARDWOOD LUMBER
American Plywood Corp., New London, Wis.
Anderson, Shreiner & Mawson, Toronto, Ont.
Atlantic Lumber Company, Toronto, Ont.
Bedna Young Lumber Co., Jackson, Tenn.
Banning, Leland G., Cincinnati, Ohio.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Chapman & Dewey Lumber Co., Marked Tree, Ark.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Canadian General Lumber Co., Toronto, Ont.
Des Moines Sawmill Co., Des Moines, Iowa
Hyde Lumber Co., Memphis, Tenn.
Heeney, Percy E. Kitchener, Ont.
Kirby Bonner Lumber Co., Houston, Texas
Kneeland-Bigelow Co., Bay City, Mich.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Louisville Point Lumber Co., Louisville, Ky.
Long-Bell Lumber Co., Kansas City, Mo.
McDonagh Lumber Co., Toronto, Ont.
Luehrman Hardwood Lbr. Co., St. Louis, Mo.
Mercereau-Hawkins Tie Co., Huntington, W. Va
Mississippi Hardwood Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Oliver Lumber Co., Toronto, Ont.
Otis Mfg. Co., New Orleans, La.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Ritter Lumber Co., W. M. Columbus, Ohio.
Sondheimer Co., E., Sondheimer, La.
Stack Lumber Co., Escanaba, Mich.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Stimson & Co., J. V., Owensboro, Ky.
Sullivan, Frank T. Buffalo, N. Y.
Terry-Nicholson-Cates Ltd., Toronto, Ont.
Thurn-Maxsom Lumber Co., South Bend, Ind.
Toronto Hardwood Lumber Co., Toronto, Ont.
Wood Mosaic Co., Louisville, Ky.
Willey Co., C. L. Chicago, Ill.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HARDWOOD LUMBER (Kiln Dried)
Rathbone, Geo. Ltd., Toronto, Ont.

HARDWOOD FLOORING
Eaton & Sons J. R. Orillia, Ont.

HEATING SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

JOINTERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Preston Woodworking Machinery Company, Preston, Ont.
Smith Machinery Co., Saginaw, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Hay Knife Co., Peter, Galt, Ont.
Oliver Machinery Co., Grand Rapids, Mich.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shimer Cutter Head Co., of Can. Ltd., Galt.
Simonds Canada Saw Co., Montreal, P.Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNOBS
Waddell Mfg Co., Grand Rapids, Mich.

LACQUERS
Cosmos Chemical Co., Port Hope, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sanducky, Ohio.
Mattison Machine Works, Rochford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

LEGS
Klise Manufacturing Co., Grand Rapids, Mich.

LUMBER DRY KILNS
Sturtevant, B. F. & Co., Galt, Ont.
Nichols Company, A. S. New York, N.Y.

MAHOGANY
Otis Mfg. Co., New Orleans, La.
Toronto Hardwood Lumber Co., Toronto, Ont.

MACHINE KNIVES
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

METHYLATED SPIRITS
Canadian Industrial Alcohol Co., Montreal

MAGNOLIA
South Texas Lumber Co., Houston, Texas

MILL PIPING
Toronto Blower Co., Toronto, Ont.

MITRE SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS
Sturtevant, B. F. & Co., Galt, Ont.

MOTORS
Lancashire Dynamo & Motor Co., Toronto,
Northern Electric Co., Montreal, Que.
Sturtevant, B. F. & Co., Galt, Ont.

MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati. Ohio.
Nash, J. M., Milwaukee, Wis.

NAILING MACHINES
Yates Machine Co., P. B., Hamilton, Ont.

OAK FLOORING
Rathbone, Geo. Ltd., Toronto, Ont.

PAINT
Marietta Paint & Color Co., Marietta, Ohio.
Sanderson Pearcy & Co., Toronto, Ont.

PAINT DRYERS
Sanderson Pearcy & Co., Toronto, Ont.
Nichols Company, A. S. New York, N.Y.
American Plywood Corporation, New London, Wis.

PAINT SPRAYING EQUIPMENT
DeVilbiss Mfg. Co., Toledo, Ohio

PANELS
Hay & Co., Woodstock, Ont.
Pannill Door Co. Ltd., Toronto, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PATTERNS PINE
Rathbone, Geo. Ltd., Toronto, Ont.

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

What Makes A Garnet Paper Successful?

THE successful performance of any garnet paper is read in the increased production it gives; is noted in the superior finish it produces; it is written in the records of lowered sanding costs.

In hundreds of plants Carborundum Brand Garnet Paper is giving just such sanding results, enabling the sanders to keep production up where it should be—giving a smooth, uniform, scratchless finish—standing up to the work without dulling or filling—and thus keeping down sanding costs.

You would expect such results from a garnet paper that is made right—that has a strong, durable, flexible backing of the best rope stock—that is coated with the highest grade of glue and the hardest, sharpest of all garnet, the North River Garnet.

The Carborundum Company, Niagara Falls, N. Y., U. S. A.
New York, Boston, Chicago, Cleveland, Detroit, Cincinnati, Philadelphia, Pittsburgh, Grand Rapids. Milwaukee

CARBORUNDUM BRAND GARNET PRODUCTS

Make Good Sanders—Better Sanders

"Canadian Woodworker" Buyers' Directory—Continued

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
General Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Toronto Blower Co., Toronto, Ont.
Williams Machinery Co., A. R. Toronto, Ont. Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corp., New London, Wis.
Calhoun Plywood Co., Sheboygan, Wis.
Guelph Patent Cask Co., Scotstown, P. Q.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

POWER APPARATUS
Northern Electric Co., Montreal, Que.

POWER & LIGHT PLANTS
Fischman Spring Co., Kitchener, Ont.

POWER TRANSMISSION MACHINERY
Bond Engineering Works, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PRESSES (Veneer)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Bond Engineering Works, Toronto, Ont.

PULLEYS
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PUMPS—Condensation and Return
Canadian Blower & Forge Co., Kitchener, Ont.
Preston Woodworking Machinery Company, Preston. Ont.
Smart-Turner Machine Co., Hamilton, Ont.

RATTANS
Carter, E. T., Toronto, Ont.

REEDS
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RETORTS
Perfection Wood Steaming Retort Co.,

REVERSIBLE PLANING MILL FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FOLLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SANDPAPER
Behr & Co., Herman, Brooklyn, N. Y.
Canada Glue Co., Brantford, Ont.
Carborundum Co., Niagara Falls, N.Y.
Sanderson Pearcy & Co., Toronto, Ont.

SASH DIMENSION
Pannill Door Co., Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW SHARPENERS
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
General Machinery Co., Toronto, Ont.
Cowan & Company, Galt, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

SHAFTING
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.
Bond Engineering Works, Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

SHELLAC
Marietta Paint & Color Co., Marietta, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

SINGLE SPINDLE BOXING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

SOFTWOODS
Canadian General Lumber Co., Toronto, Ont.
Rathbone, Geo., Limited, Toronto, Ont.
Heeney, Percy E. Kitchener, Ont.
Luehrman Hardwood Lumber Co. Chas. F., St. Louis, Mo.
Terry-Nicholson-Cates Ltd., Toronto, Ont.

SPRINGS
Ideal Fence & Spring Co., Windsor Ont.

SPRING MATTRESSES
Fischman Spring Co., Kitchener, Ont.

SPRING CONSTRUCTION
Fischman Spring Co., Kitchener, Ont.

SPRUCE DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM & OIL SEPARATORS AND REFINERS
Smart-Turner Machine Co., Hamilton, Ont.

STEEL BALLS
Canadian SKF Co., Toronto, Ont.

STEEL PLATE PLANING MILL EXHAUST
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

STEEL PRESSURE BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE RIMS
Bruce Woodworkers Limited, Chesley, Ont.

TABLE SLIDES
Bruce Woodworkers Limited, Chesley, Ont.
Watertown Table Slide Co., Watertown, Wis.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Pettingell. Machine Co., Amesbury, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS
National Dry Kiln Co., Indianapolis, Ind.

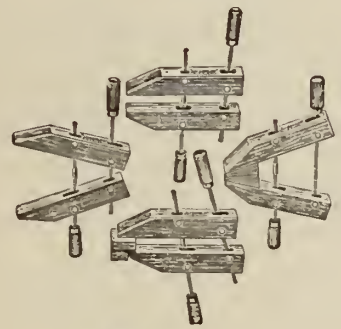
TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

The manufacturer who makes the article is helpless without the merchant who makes the market

Reach your market through "Canadian Woodworker"

The "JORGENSEN" Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws



The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."

"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

Manufactured only by the

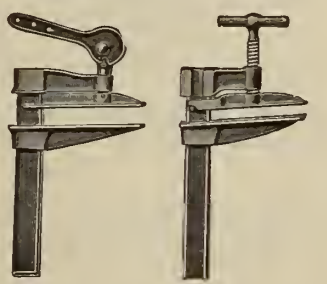
Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

For Sale By

Aikenhead Hardware Limited .....Toronto
Lewis Bros., Limited .....Montreal

Colt's Clamps for the Woodworker



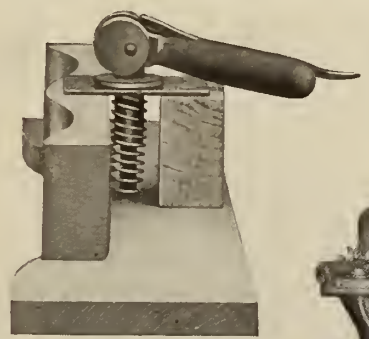
Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

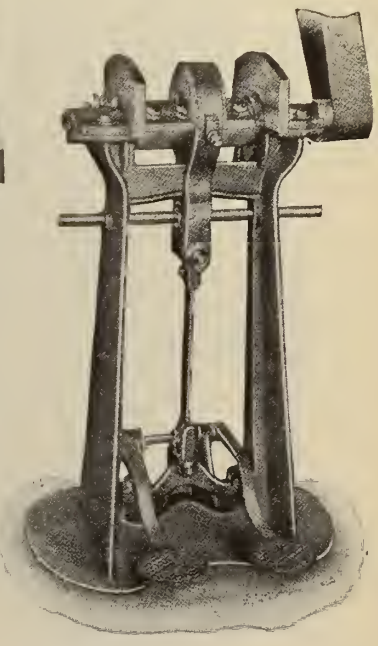
For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.



Pettingell Stock Clamps for holding stock on forms or jigs when milling or cutting irregular shapes of stock on Dressers — Shapers or Moulding Machines.



Irregular Dresser or Shaper

This machine is designed for dressing all odd or irregular stock to shape. Especially suitable for box pattern work. Necessary in every mill where body stock is turned out.

Woodworking Machines
No. 19 Small Saw Tenoner.
No. 21 Regular Bevel and Mitre Saw.
No. 23 8½-in. Irregular Dresser.
Woodworking machines equipped.
No. 20 Large Saw Tenoner.
No. 22 Large Bevel and Mitre Saw.
No. 24 6-in. Irregular Dresser Stock clamps.
with direct motor or belt drive.

Write for catalogue

PETTINGELL MACHINE COMPANY

AMESBURY - MASS.

"Canadian Woodworker" Buyers' Directory—Continued

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

TURNED WOOD GOODS
Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TURPENTINE
Brown Corporation, Quebec, P.Q.
Carter, E. T., Toronto, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

TWIST WORK
Klise Manufacturing Co., Grand Rapids, Mich.

TWISTING AND FLUTING MACHINES
Shawver Co., Springfield, Ohio

UNDERGRATE BLOWERS

Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

VACUUM PUMPS
Canadian Blower & Forge Co., Kitchener, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

VARNISH
Marietta Paint & Color Co., Marietta, Ohio
Sanderson Percy & Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Acme Veneer & Lumber Co., Cincinnati, O.
American Plywood Corp., New London, Wis.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Hartzell, Geo. W., Piqua, Ohio.
Litton Veneer Co., Rockford, Ill.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Nickey Bros., Memphis, Tenn.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER DRYERS
Nichols Company, A. S. New York, N.Y.

VENEER SAWS

Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin, William R. Ltd.
Preston Woodworking Machinery Company, Preston, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WALNUT LUMBER
American Walnut Mfrs. Assn., Chicago.
Des Moines Sawmill Co., Des Moines, Iowa.
Hartzell, Geo. W. Piqua, O.
Kirby Bonner Lumber Co., Houston, Texas
Maus Lumber Co., Chas. O. South Bend, Ind.
Sullivan, Frank T., Buffalo, N. Y.
Toronto Hardwood Lumber Co., Toronto, Ont.

WASTE
Carter, E. T., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Pettingell Machine Co., Amesbury, Mass.

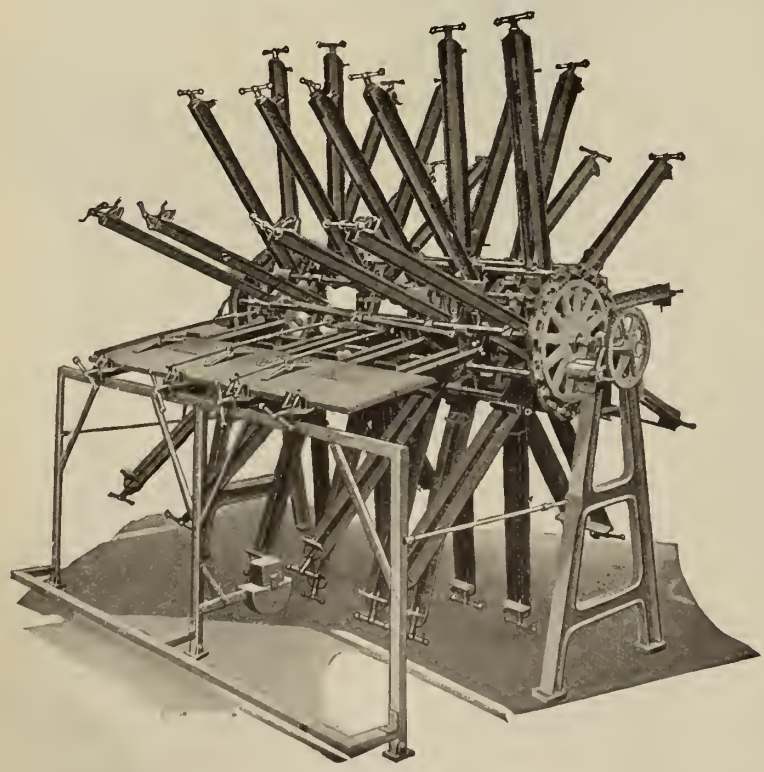
WOOD STEAM RETORTS
Perfection Wood Steaming Retort Co., Parkersburg, W. .Va
Shawver Co., Springfield, Ohio

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.

Speed + Perfect Joints = Low Costs



REG. U.S. PAT. OFF.
The Taylor TRADE MARK

CLAMP CARRIER
for
Small Jobs in the Big Plant
All Jobs in the Little Plant

1. Natural standing position of operator.
2. No Juggling of heavy clamps.
3. No bending or walking.
4. No pile to overturn to get work glued first—simply move clamp one section.
5. Less space than equal number of clamps with work in, piled on the floor.

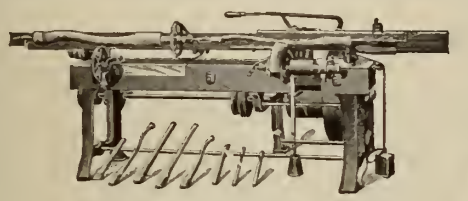
Any size to suit your work. 8 and 12-section wheel type. 16, 20, 30 and 40-section chain type. 4, 5 or 6 clamps per section for stock up to 42-in. wide.

Representatives:
A. R. Williams Machinery Co., Toronto. Canada

James L. Taylor Mfg. Company
Poughkeepsie, N.Y., U.S.A.

Klotz Machine Co's
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

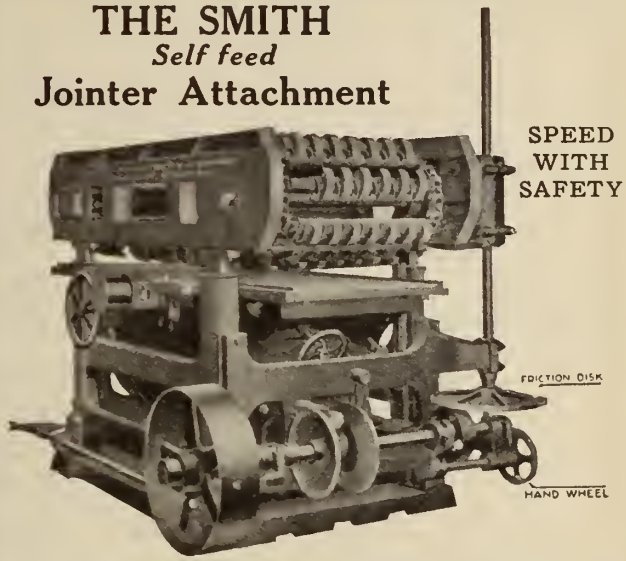
MANUFACTURED BY

Klotz Machine Co.,
Sandusky, O., U. S. A.

Write for descriptive circulars and prices.

THE SMITH
Self feed
Jointer Attachment

SPEED WITH SAFETY



Here is a self feed jointer attachment that is saving its users an average of $1200.00 per year.

We will make this attachment to fit any standard jointer or will furnish jointer and attachment complete.

SMITH MACHINERY CO.
SAGINAW - MICH.

McKnight's No. 51

Vertical Motor-Driven Boring Machine

Direct-motor driven.

Can be set up anywhere without reference to line shafting.

Eliminates countershaft and belting.

Write for Cuts and Information.

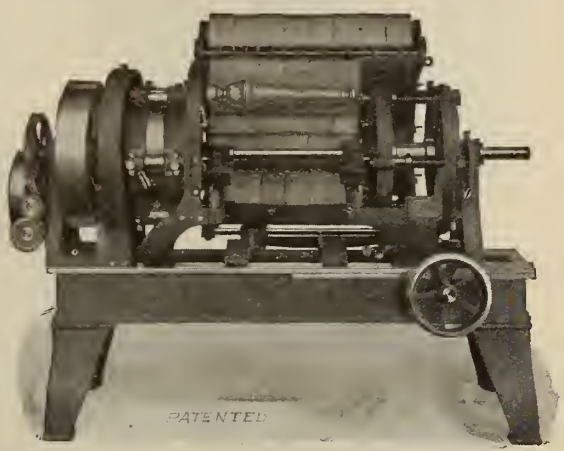
L. G. McKnight & Son Co.

Manufacturers of Patented

Chair Making—Chair Bending
Wood Working
Machinery

GARDNER, MASSACHUSETTS, U. S. A.
Since 1876

Are You Satisfied



with the sanding of your furniture turnings?

Unless you have a NASH SANDER you are not getting the best possible results either in quantity or quality.

Ask for my demonstration and trial proposition.

J. M. NASH, Milwaukee, Wis.

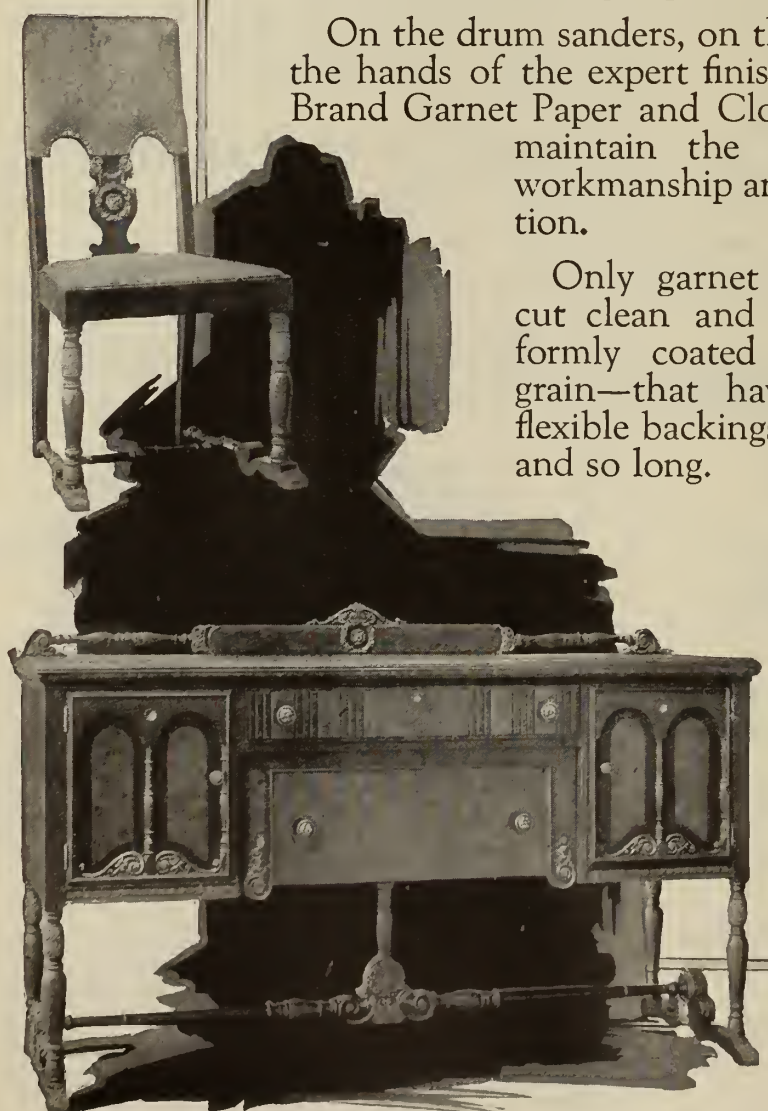
A Record of which we are Justly Proud

THE skill, the artistry—that certain outstanding mark of the master creators of beautiful furniture are evidenced in the products of the Grand Rapids Bookcase & Chair Company of Hastings, Michigan.

We are proud to say that since 1907 Carborundum Brand Garnet Paper and Cloth have dominated in the sanding departments of this plant.

On the drum sanders, on the belt machines, in the hands of the expert finishers, Carborundum Brand Garnet Paper and Cloth enable them to maintain the highest quality of workmanship and adequate production.

Only garnet products that can cut clean and fast—that are uniformly coated with pure, sharp grain—that have strong, durable flexible backings could serve so well and so long.



Carborundum Brand
Garnet Products
Make Good Sanders
Better Sanders

The Carborundum Company
Niagara Falls, N. Y., U. S. A.

New York, Chicago, Philadelphia, Boston, Detroit, Cleveland, Cincinnati, Pittsburgh, Grand Rapids, Milwaukee

Door Panels 3/8"

800 pc. 3/8 x 25 x 68 Fir G2S
600 " do. 62
250 " do. 3/8 x 24 x 60
250 " do. 72
250 " 3/8 x 30 x 60
250 " do. 72

500 " 1/4 x 30 x 72 Fir G1S

50 " 3/8 x 25 x 62 Bass G2S
35 " do. 68
124 " 3/8 x 25 x 62 Birch G2S
175 " do. 68

160 " 3/8 x 25 x 68 1/4 Cut W. Oak
60 " do. 62

24 pc. 3/8 x 24 x 72 1/4 Cut W. Oak
8 " 3/8 x 30 x 72 1/4 Cut W. Oak

74 " 3/8 x 25 x 62 Pl. Oak.
140 " do. 68
46 " 3/8 x 30 x 60 Pl. Oak
10 " 3/8 x 24 x 60 Pl. Oak.

30 " 3/8 x 24 x 60 Chest
7 " 3/8 x 24 x 60 Chest
100 " 3/8 x 25 x 68 Chest
147 " 3/8 x 25 x 62 Chest

165 " 3/8 x 25 x 68 Sel. R. Gum.
75 " 3/8 x 25 x 62 Sel R. Gum
17 " 1/8 x 24 x 60 3 Ply Cottonw'd
34 " 1/8 x 32 x 60 "
68 " 1/8 x 24 x 66 "

160 pc. 1/8 x 42 x 66 "
47 " 3/16 x 24 x 66 "
30 " 3/16 x 32 x 66 "

344 " 1/4 x 42 x 66 "
106 " 1/4 x 42 x 60 "
60 " 1/4 x 24 x 60 "

California White Pine

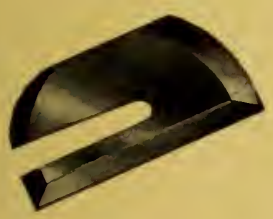
30,000 ft. 4/4 Clear
4,200 " 5/4 "
12,000 " 6/4 "
18,000 " 8/4 C. Select

4,000 " 10/4 "
6,000 " 12/4 "

Let us quote you on any good lumber you require.

George Rathbone Ltd.

Northcote Ave., Toronto



ATKINS

STERLING QUALITY

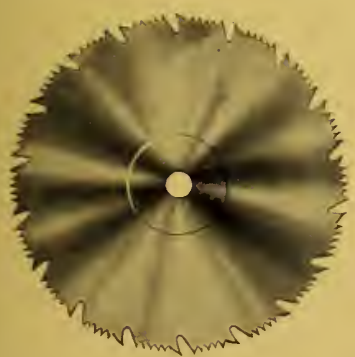
SAWS and KNIVES

ECONOMIZE

ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing

Atkins Sterling Quality Saws

and Machine Knives



Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.

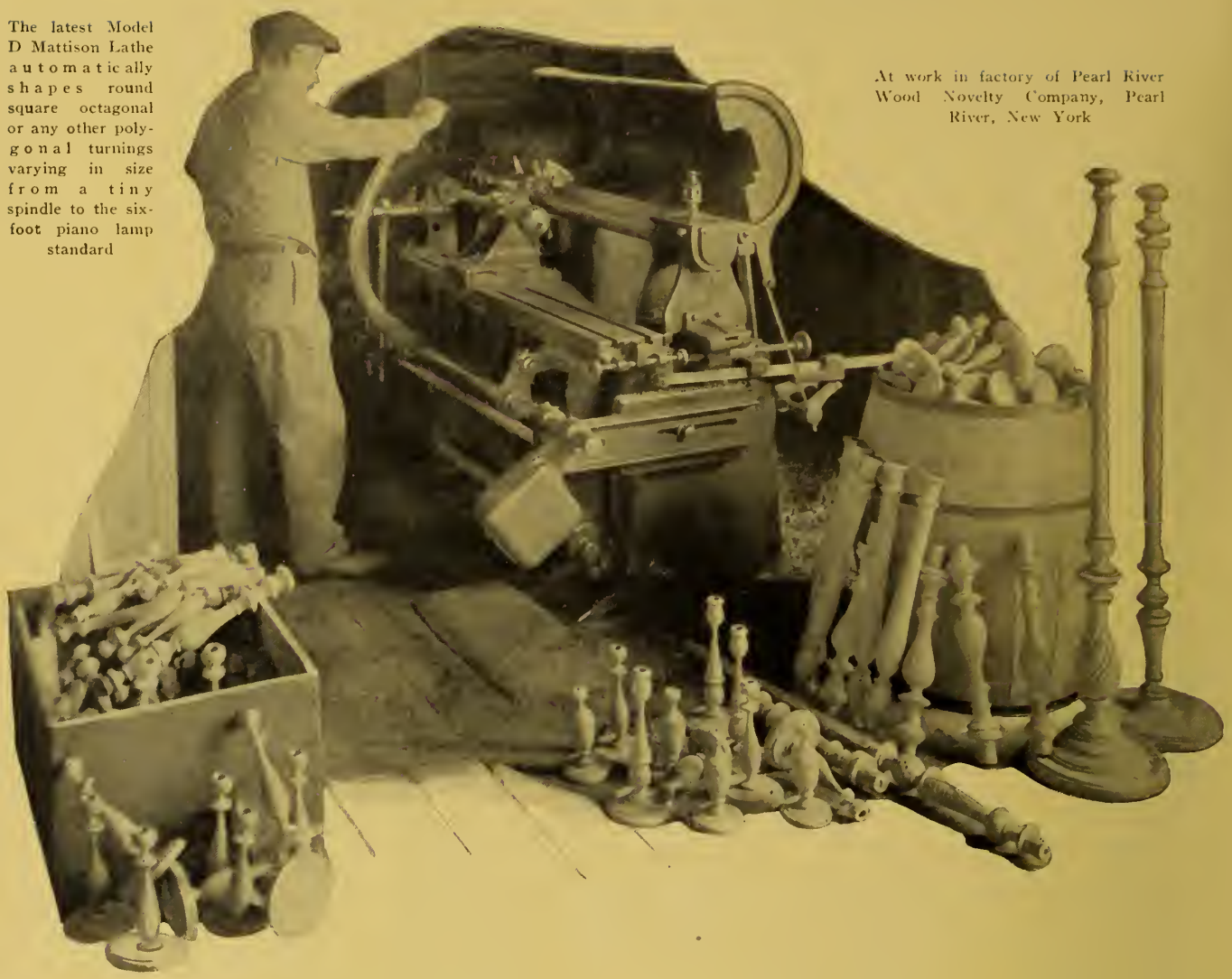
Write ta-day far our Knife Baoklet "C.W." and Pattern Template Paper.

E.C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

The latest Model D Mattison Lathe automatically shapes round square octagonal or any other polygonal turnings varying in size from a tiny spindle to the six-foot piano lamp standard



At work in factory of Pearl River Wood Novelty Company, Pearl River, New York

The Standard Machine Turner

MORE than 3,000 Mattison Lathes of our different models have been installed. All the leading manufacturers have standardized on it for their turned work, and it is one of the first machines to be given consideration in equipping new furniture factories.

It is as thoroughly practical for the small manufacturer as the large one, because it is capable of handling small lots of turnings economically. The simplified cutterhead system enables the ordinary mechanic to prepare his knives without difficulty.

If you use turnings and are still employing hand-lathe or band-saw methods or antiquated turning machines, this greatly improved and refined Model 57-D Mattison Lathe will save you money, material labor; increase the scope of your designer; and enable you to produce your turned work on an equal basis with your largest competitor.

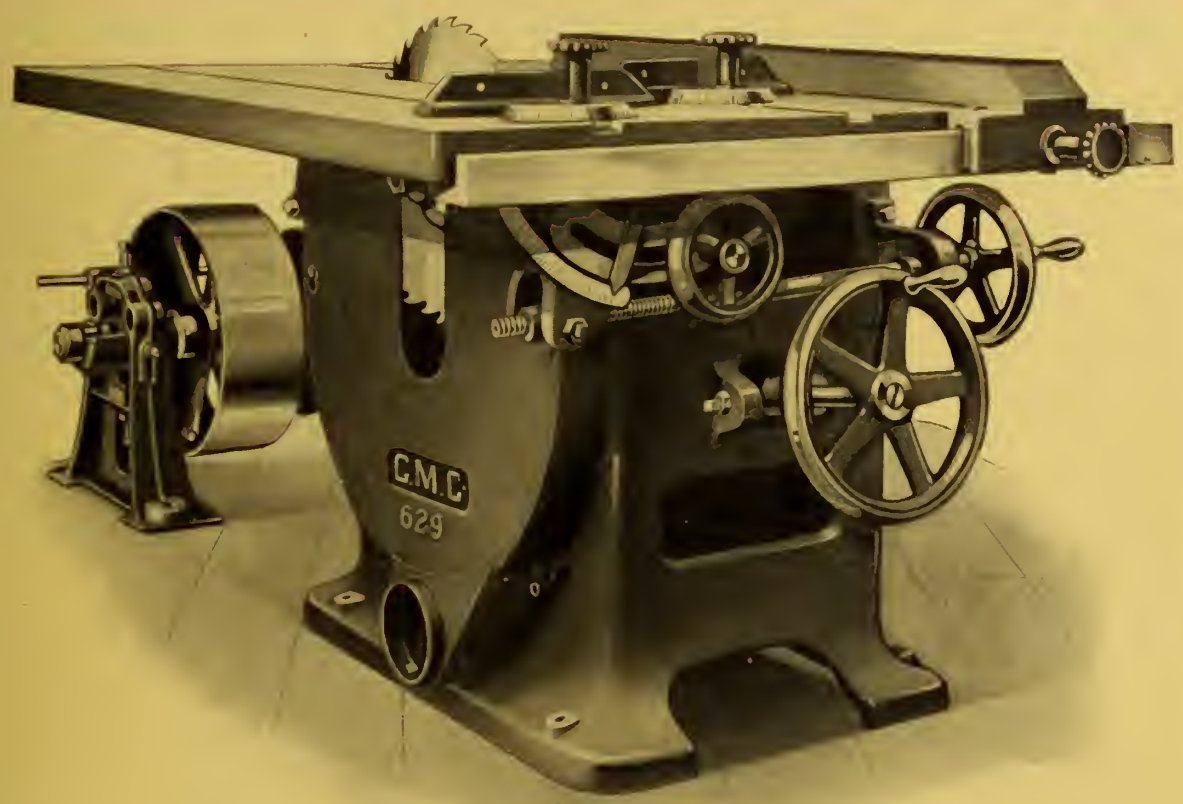
The hollow chuck attachment for the new Model D Mattison Lathe has been greatly simplified over any arrangement of this nature used heretofore on any turning machine. It works faster; can be attached or removed by one man; has automatic centering device which saves stock on some turnings; its locking device holds the turning firmly without danger of chuck jaws loosening, no matter in which direction the stock is revolved.

MATTISON
MACHINE WORKS
Main Office and Works:—Rockford, Illinois

Instead of spending money needlessly for your turnings, invest in this Lathe and let it save for you that extra margin of profit which now goes for high-priced labor, or to the outside job shop. Write for descriptive bulletin.

Volume-Twenty Three TORONTO, SEPTEMBER, 1923 Number Nine

CANADIAN WOODWORKER and Furniture Manufacturer



C.M.C.
THE MARK OF MERIT

Announcing — 629 Heavy Variety Saw

A new variety Saw for heavy ripping and cutting off in hardwoods, having a heavy arbor and plenty of pulley and belt power to properly drive saw blades up to 22″ in diameter through continuous heavy cuts up to 6¼″ thick. On account of its tilting table and graduated gauges, it is also valuable for lighter ripping, cutting off, mitreing, dadoing, etc. It is a real Production Machine which fills a long felt need. Do you need a "629." Illustrated bulletin sent upon request.

CANADA MACHINERY CORPORATION
LIMITED

GALT — ONTARIO

Manufacturers of Iron and Woodworking Machine Tools

Toronto Sales Office - - - 721 Bank of Hamilton Bldg.

Alphabetical Index to Advertisers, Page 12

THE CORNER STONE

The corner stone of our policy is mutual interest.

Our first obligation is to produce a product of the highest grade.

Our next obligation is to see that our product does exactly what we say it will.

This perhaps explains why the great majority of the trade looks to us for its industrial alcohol requirements, and depends upon us for reliable authoritative advice.

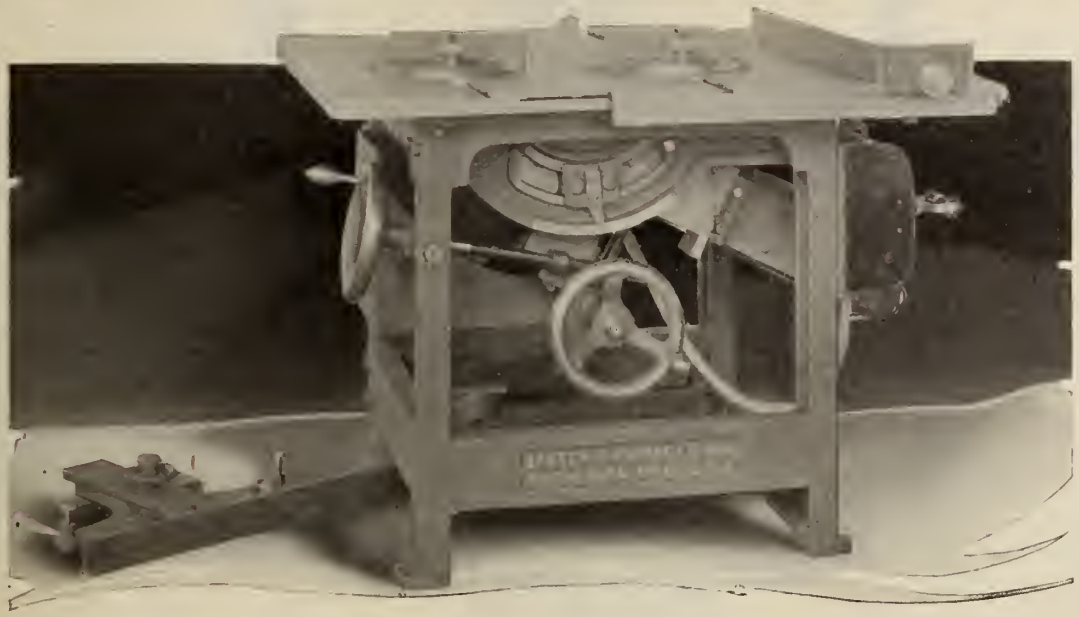
Your enquiry is invited.

Canadian Industrial Alcohol
Company, Limited
MONTREAL

Manufacturers of
MAPLE LEAF BRAND
Ethyl Alcohol-Cologne Spirits-Absolute Alcohol, B.P.
Methylated Spirits and Denatured Alcohol (all formulae)

Distributing Warehouses
Montreal-Toronto-Winnipeg-Vancouver-

SKF



Ball Bearing Saw Arbors Operate
Efficiently at Any Angle of Tilt

THE combination of heavy loads, high speeds and angle of tilt imposes severe duties on the bearings of tilting-arbor saws. These conditions practically prohibit the use of plain bearings, which would soon have their lubricant forced out, leaving metal to metal contact with its inevitable result—heating, wear and frequent need for bearing adjustments and renewals.

In this saw bench, the saw arbor, which also carries the armature of the driving motor, is mounted on deep-groove ball bearings made by the Hess-Bright Manufacturing Company. The oil which lubricates the bearing is in the recesses between the balls and cannot be squeezed out. Neither speed, load nor angle of tilt affect the lubrication and even after years of service no wear is noticeable.

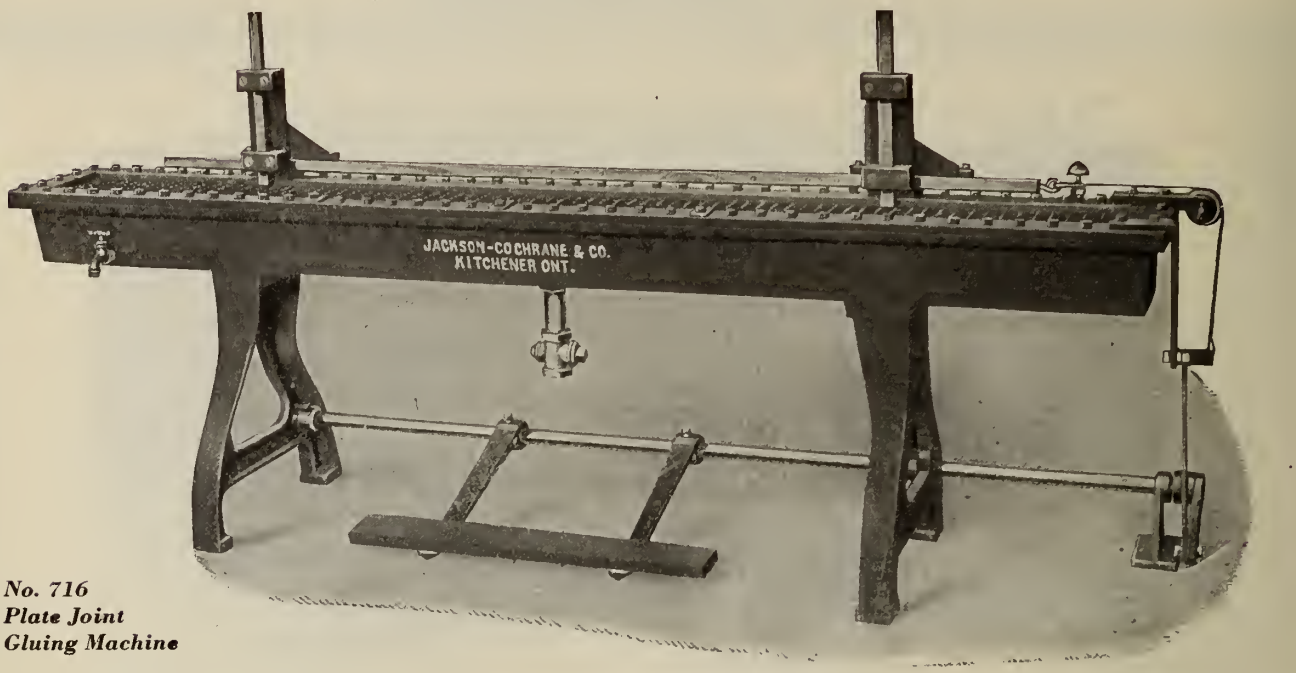
Obtain all the advantages of efficient and continuous production by specifying ball bearing equipped wood-working machinery.

CANADIAN SKF COMPANY, LIMITED
TORONTO — MONTREAL

Races displaced to show DEEP-GROOVE bearing carrying maximum end thrust in a forward direction.

Races displaced to show THE SAME bearing carrying maximum thrust in reverse direction.

A NEW PLATE JOINT GLUE SPREADER



No. 716
Plate Joint
Gluing Machine

YOU CAN DOUBLE THE PRODUCTION OF YOUR GLUE CLAMPS WITH THIS NEW MACHINE

A thoroughly tested and tried machine that operates easily without waste or mess. It will more than double the production of your clamping equipment. This was proven when it was recently given a thorough trial in one of the largest furniture factories in the Dominion.

The method of operation is simple. The operator presses the foot lever down, forcing the perforated plate up out of the glue. Then by resting the edges of the stock on the plate and moving them backward or forward about one inch, the edges resting on the plate will be instantly and completely spread with glue. On releasing the foot lever the plate is lowered into the glue ready for the next batch of stock.

The machine is supplied with a self acting cover which raises and lowers automatically with the plate, keeping the glue free from dirt.
The tank is 7″ wide and 4″ deep.
Perforated plate is 5″ wide, and 1″ shorter than tank.

Size	Floor Space	Weight
5′ 11″	7′ x 2′	700
7′ 11″	9′ x 2′	800

Descriptive Circular sent on request.

JACKSON, COCHRANE & CO., KITCHENER, ONT.

NEW "LIGHTNING" MORTISER

BELTLESS POWER FEED

Fan Cooled Motor mounted direct on spindle running in ball bearings

All feeding mechanism entirely enclosed

Built in fan blower removes chips

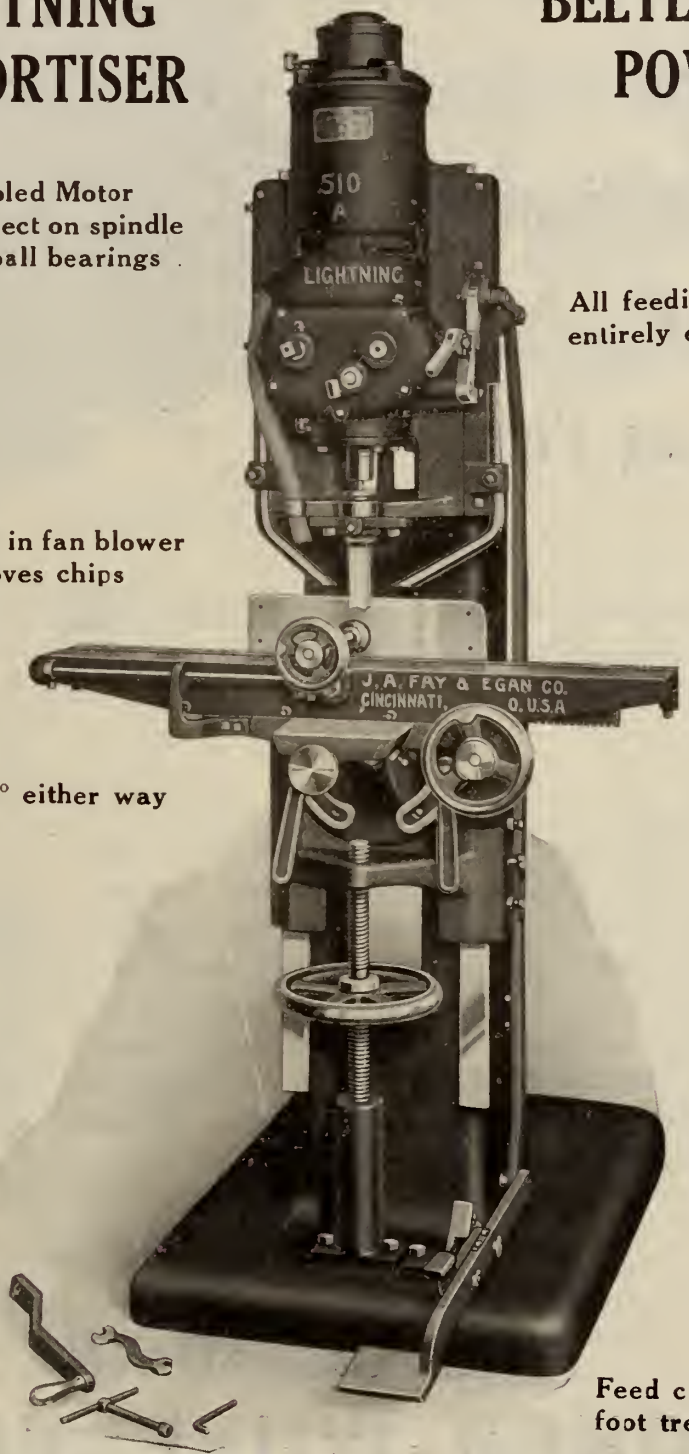


Table adjusts vertically and laterally

Table tilts 40° either way

Unusual base distribution gives great rigidity

Feed controlled by foot treadle

No. 510 "Lightning" Shaftless Motorized Automatic Vertical Hollow Chisel Mortiser

Send for illustrated bulletin J-33

J. A. Fay & Egan Company

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

2705-2805 Robertson Ave. (Oakley) Cincinnati, Ohio, U.S.A.

Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.

Branches: Montreal, St. John, N. B., Winnipeg, Vancouver

For the special conditions in the Woodworking Plant

75 H. P. 900 R.P.M. Pipe Ventilated Motor. Length of piping used depending on where the motor is to work

A totally enclosed motor, free from the danger of deterioration from fumes, steam or moisture, and from stoppage caused by swirling shavings or flying sawdust, is the ideal drive for the woodworking plant.

Designed for mounting in the most suitable position for the conditions of the drive, built with the famous cast-welded squirrel cage rotor, these specially designed motors are a satisfactory answer to the question of economical operation of your machines. The cast-welded rotor construction is an exclusive Crocker-Wheeler feature in which a solid short-circuiting ring is cast-welded to the rotor bars. Each ring is thus positively locked to the bar and becomes solidly welded to it. Failure between the two is therefore impossible. Split-end housings make bearings and motor parts readily accessible.

In the Kroehler Manufacturing Co.

In the large, modern woodworking plant of the Kroehler Manufacturing Company at Stratford, Ont., much of the motor equipment is Canadian Crocker-Wheeler.

The continuous day in, day out, service of these motors is a guarantee against costly stoppages.

Write for Bulletin No. 1001.

THE CANADIAN CROCKER-WHEELER CO. LIMITED

Head Office & Works: St. Catharines, Ont. **Dist. Offices: Toronto, Montreal, Sydney, Ottawa**

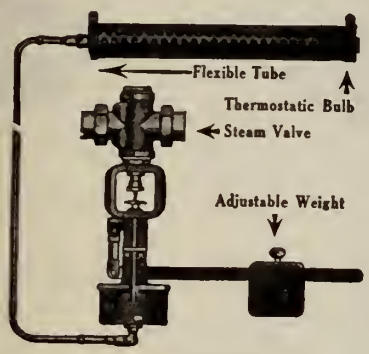
Also all Branches of *Northern Electric Company* LIMITED

Montreal, Halifax, Quebec, Toronto, Hamilton, London, Windsor, Winnipeg, Regina, Calgary, Edmonton, Vancouver.

Controlled by the

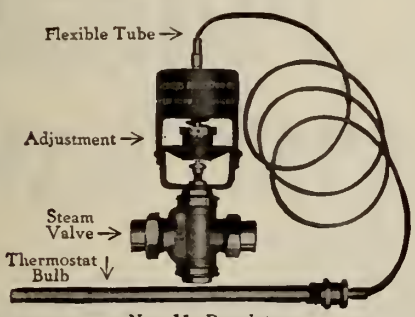
ENGLISH ELECTRIC COMPANY OF CANADA LIMITED

Automatic Temperature Control Saves this firm $13,173 a year



No. 15 Regulator

This regulator automatically controls the temperature of any process requiring a steady, accurate temperature of air. It is easily installed and may be adjusted for different temperatures as desired. Self-contained, needs no air or water pressure for its operation. Ask for Bulletin 138.



No. 11 Regulator

Controls temperature of liquids in vats, tanks, retorts, kettles, etc. Easily installed. Accurate and dependable. Ask for Bulletin 129.

Save 20% of Fuel and Increase Output of Men —New York State Commission on Ventilation says increase of room temperature from 68° to 75° reduces output of men 15 per cent. 20% more fuel is also consumed. You save these losses by using thermostats like one shown in oval to control temperature in factories, offices, schools, etc. White for booklet "The Elimination of Heat Waste."

HANDSOME profits are being earned from money invested in automatic temperature control. It speeds up production, eliminates sub-standard products, and saves fuel and labor when applied to any process requiring an accurate, uniform temperature.

Here's Proof—$685.16 invested in six Powers Regulators like the one shown on the left are saving $13,173 a year for Lyon & Healy, Inc. of Chicago.

These regulators control the heat in wood-drying kilns and have been in operation for 8 years without repairs of any kind. Drying time has been reduced from 24 to 15 days, increasing capacity of kilns 60%, and saving 135 days drying time a year; coal saved amounts to $3,942; saving of lumber formerly spoiled by "warping" and "checking" amounts to $8,748; and ⅛ of foreman's time is also saved. These are the chief savings of this installation which appear in a report of investigation made by H. P. Gould Co., Chicago. Copy of report sent upon request.

Make this 30 day test FREE—It costs you nothing to know just what automatic temperature control will save you. Without obligation you can put a Powers Regulator on a tank, vat, or steam kettle, in a drying room, oven, or work room—wherever an accurate uniform temperature will save you money. Check up on the regulator's performance. If a 30 day test convinces you that it will be a mighty good investment for your firm, pay us for it, if not, return it.

Write today and tell us where and for what purpose you want accurate temperature control.

Our staff of engineers and more than thirty years of experience is at your service.

The Canadian

Powers Regulator Co., Ltd

106 Lombard St. — Toronto

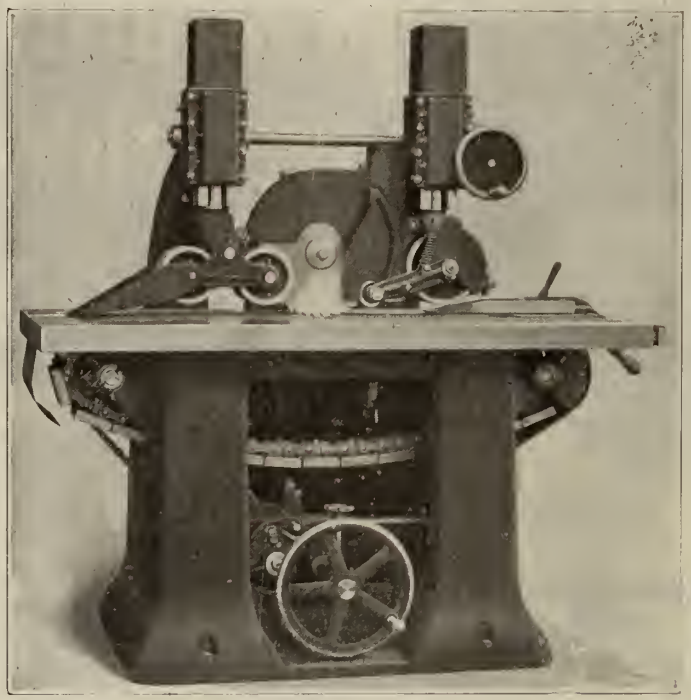
Calgary, Alta. Halifax, N.S. Montreal; Que.
Vancouver, B.C. Winnepeg, Man. (2454)

THE POWERS REGULATOR CO.

Over 30 Years of Specialization

in the Manufacture of Apparatus to Automatically Control Temperature

Yates



Yates

AN ACCURATE, PRECISE EDGING AND RIPPING SAW

Yates G-2 installation is justified alone by the fact that it saves labor, to say nothing of its accurate and dependable qualities. Without solicitation, many users write letters about the fine capacity of this machine to cut labor costs.

One firm writes that their two G-2's are doing work formerly done by ten men on table saws. In a furniture factory where two G-2's are set in tandem, two men are doing the work of eight on older machines. Many other firms advise that the saving in labor over older methods ranges from 20 to 50 per cent.

Besides this great saving in labor, consider that Yates G-2 rips so straight and accurate that subsequent operations are unnecessary in a great many cases. Stock simply is run through the machine and then passed on for gluing.

P. B. Yates Machine Co. Ltd.
HAMILTON — ONTARIO
WORLD'S LARGEST MANUFACTURERS OF WOODWORKING MACHINERY

Where are values to-day?

The insurance of your property is a matter of grave importance. It can be made on an economical, safe basis —if you have a Canadian Appraisal —or it can be the reverse, if you use book values, old appraisals, or an estimate of present worth.

Insurance protects values, not property. If you don't know exactly what those values are now, there is no possible means of insuring them safely or economically. This is a service in which we are eminently fitted to serve you.

The Canadian Appraisal Co. Limited

364 University St., MONTREAL

TORONTO Royal Bank Bldg.

NEW YORK Equitable Bldg.

Dunlop Belting and Hose

"Gibraltar RedSpecial"—The High-Grade Belt for Transmission Service.

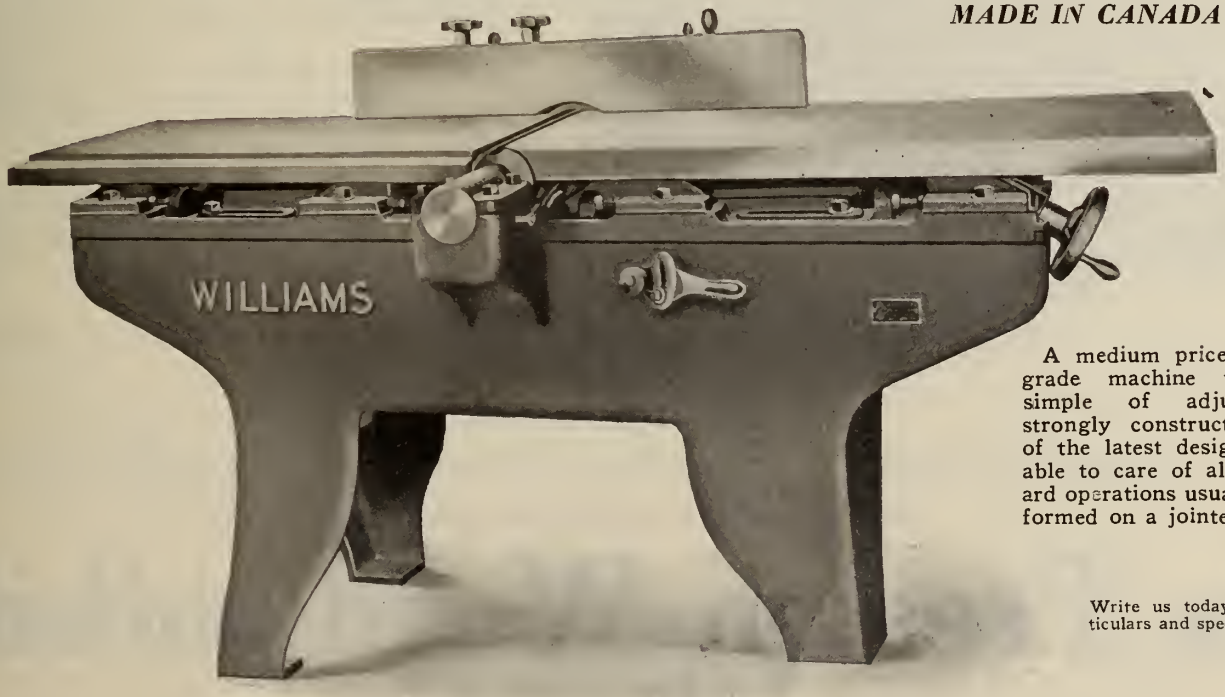
"Gibraltar" Conveyor and Elevator Belts—the Belts with the protective covering of Cord Tire Tread Stock that effectively resists abrasive action.

DUNLOP

Belting, Hose, Packing and General Mechanical Rubber Products for Every Purpose.

The "Williams" Buzz Planer or Jointer

MADE IN CANADA



A medium priced, high grade machine that is simple of adjustment, strongly constructed and of the latest design—well able to care of all standard operations usually performed on a jointer.

Write us today for particulars and specifications.

THE A. R. WILLIAMS MACHINERY COMPANY, LIMITED, TORONTO

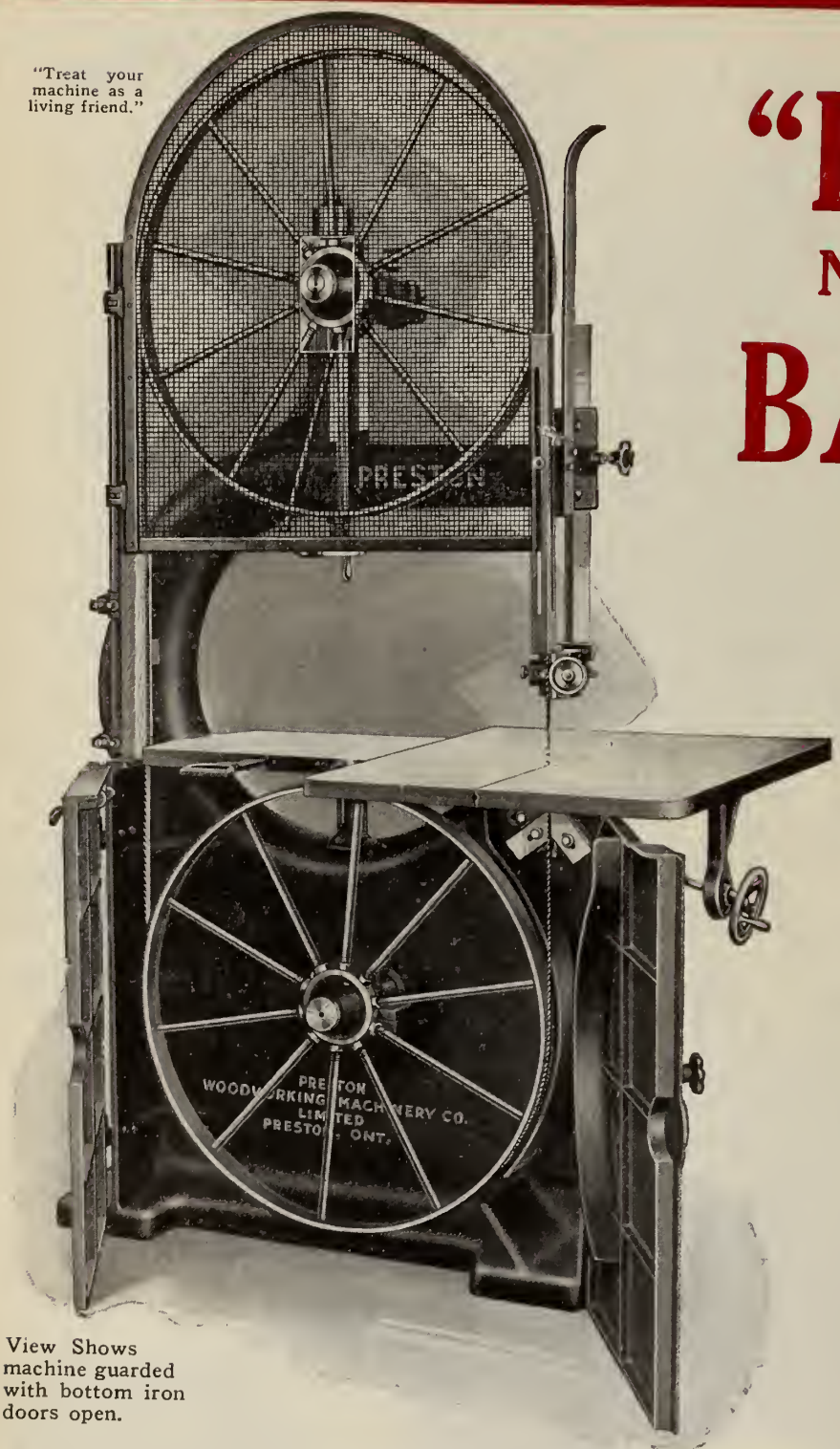
Halifax, N. S. St. John, N.B. Montreal, Que. Winnipeg, Man. Vancouver, B.C.

"Treat your machine as a living friend."

"PRESTON"

No. 132—36" and 30"

BAND SAW



View Shows machine guarded with bottom iron doors open.

SPECIAL FEATURES

1.—All Steel Wheels covered with solid rubber bands 1/4" thick.

2.—Perfect Tension Device and style of guide that, combined reduce saw-breakage to a minimum.

3.—Universal alignment of wheels.

4.—Convenient adjustments. Smooth, steady operation.

5.—Supplied with 3 H.P. Electric Motor for individual drive if desired.

6.—Supplied with SKF Ball Bearings in upper and lower wheels if desired.

7.—Made with or without guards.

Most Band Saws break too many blades. Our machine will more than save its original cost in reduction in saw breakages.

Write for descriptive pamphlet and prices

The Preston Woodworking

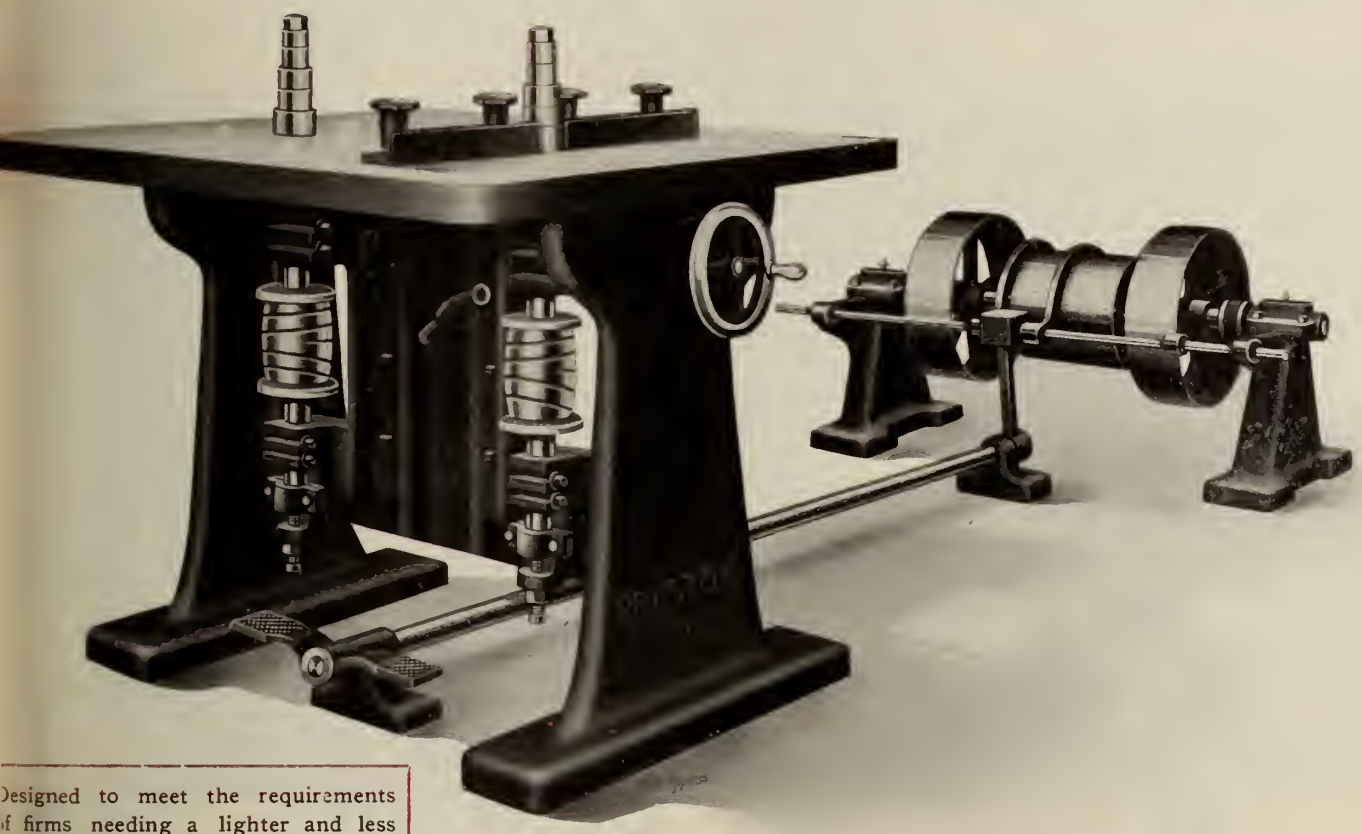
PRESTON

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

A NEW SHAPER

"Preston" No. 164 Ball Bearing

or Babbitt Bearing



Designed to meet the requirements of firms needing a lighter and less expensive Shaper than our No. 162.

Made with

Babbitt Bearings, Plain Countershaft
S K F Ball Bearings, Plain Countershaft
S K F Ball Bearings, Special Countershaft

This machine, equipped with BALL BEARINGS, will be found particularly suitable for the needs of many firms. Don't hesitate to ask for information.

WE ARE SHAPER PEOPLE and make Shapers for every purpose. Ten years of careful study and research have placed us in the enviable position of being able to supply information and advice not easily gained elsewhere.

Machinery Company Ltd.

ONTARIO

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

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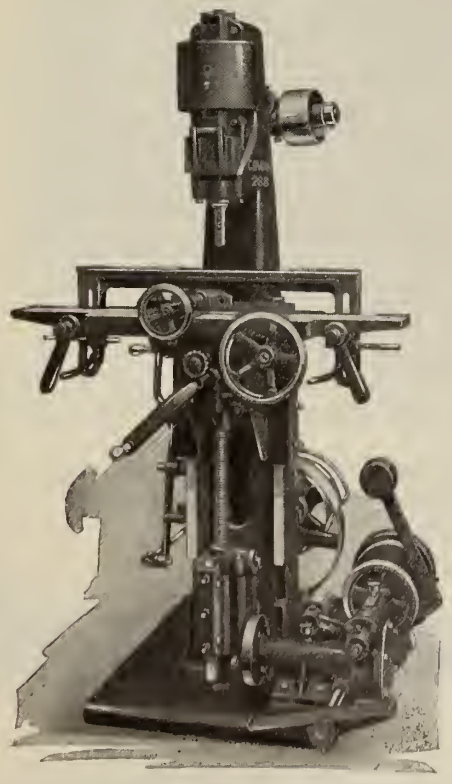

COWAN

HOLLOW CHISEL MORTISER 288

Automatic Power Feed **Lower Costs**

Faster and Better Mortising

It fully meets the demand for a Power Feed Machine for sash, door and other mortising work.

Highest Efficiency **Convenient Control**

Mortises up to ¾″ square, 3″ deep. Stroke 3¼″ or 4¼″. 18 or 24 per minute.

Cowan & Company of Galt Limited

Galt, Ontario, Canada

The GRAND RAPIDS VAPOR KILN
contributes to BERKEY & GAY efficiency

Generally speaking the more representative woodworking and wood handling plants in the country are equipped not only with Grand Rapids Vapor Kilns, but with Grand Rapids Vapor Kiln instruments and equipment. Results are what these factories are after. and the results obtained from Grand Rapids Vapor Kiln installations and operation speak for themselves. That is why during the past year nearly 50 per cent. of our business came from "repeat" orders.

Send for our technical bulletins. They cover practically every phase of wood curing problems. Our engineering corps is at your command. Write, wire, phone, or call.

GRAND RAPIDS VAPOR KILN

Engineers, Manufacturers, Contractors **Grand Rapids, Mich.**

Represented on the Pacific Coast by E. F. Tindolph, 5539 White-Henry Stuart Building, Seattle, Wash.

Foreign Offices:

A. R. Williams Machinery Co. St. Johns, N. B.

The Oliver Machinery Co. Manchester, England

Hampe & Hartwig Hamburg, Germany

Take a tip from this Foremost Factory

The Berkey & Gay Furniture Company stands well to the front in the furniture industry—a fact quite generally recognized and admitted. The Grand Rapids Vapor Kiln equipment in this plant includes 16 kilns, the interiors of which are painted with a special acid and moisture-proof paint to protect the masonry. Included also are approximately 2,000 cross-pile kiln trucks, full requirements in transfer cars, and a full compliment of instruments which enable perfect lumber tests for uniform drying, etc. The Berkey & Gay plant is but one of hundreds finding satisfaction in Grand Rapids Vapor Kiln instruments and equipment.

P·A·X

Private Automatic Exchange

CONFIDENTIAL

The Automatic Telephone

Turn the dial and immediately your call not only reaches the engineer, the shipping room,—any executive—but the call is for yourself only.

Use P.A.X. to quicken confidential transactions, to lessen irritation—to create better understanding and thus maintain greater co-operation throughout the extended plant.

The P.A.X. is the reliable friend of executives.

"A Pair of Wires and a Dial," telling of P.A.X. in operation is yours for the asking. Write our nearest House.

Northern Electric Company
LIMITED

MONTREAL TORONTO WINDSOR CALGARY
HALIFAX HAMILTON WINNIPEG EDMONTON
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"Makers of the Nation's Telephones"

MANUFACTURING
Manual Telephones
Automatic Telephones
Wires & Cables
Fire Alarm Systems
Radio Sending and receiving Equipment

DISTRIBUTING
Construction Material
Illuminating Material
Power Apparatus
Household Appliances
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Power & Light Plants
Marine Fittings

Worry-Exempt

PERKINS
183
TRADE MARK
REG. U. S. PAT. OFF.

ONLY those who know the handicaps confronting the inexperienced glue user can appreciate the blessings of exemption from worry. For the glue user who likes peace of mind there is no offering better than a glue of known value and dependability; one that will stand much abuse and still produce high quality results.

In the vegetable glue field the most "fool proof" offering is Perkins 183. The ease with which it is prepared for use and its immunity from perplexing actions with each shipment makes it ideal for the plywood maker who wishes to escape from care.

Patents covering Perkins Glue have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy, and other foreign countries.

PERKINS GLUE COMPANY

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Lansdale, Pennsylvania

Sales Office:
South Bend, Indiana

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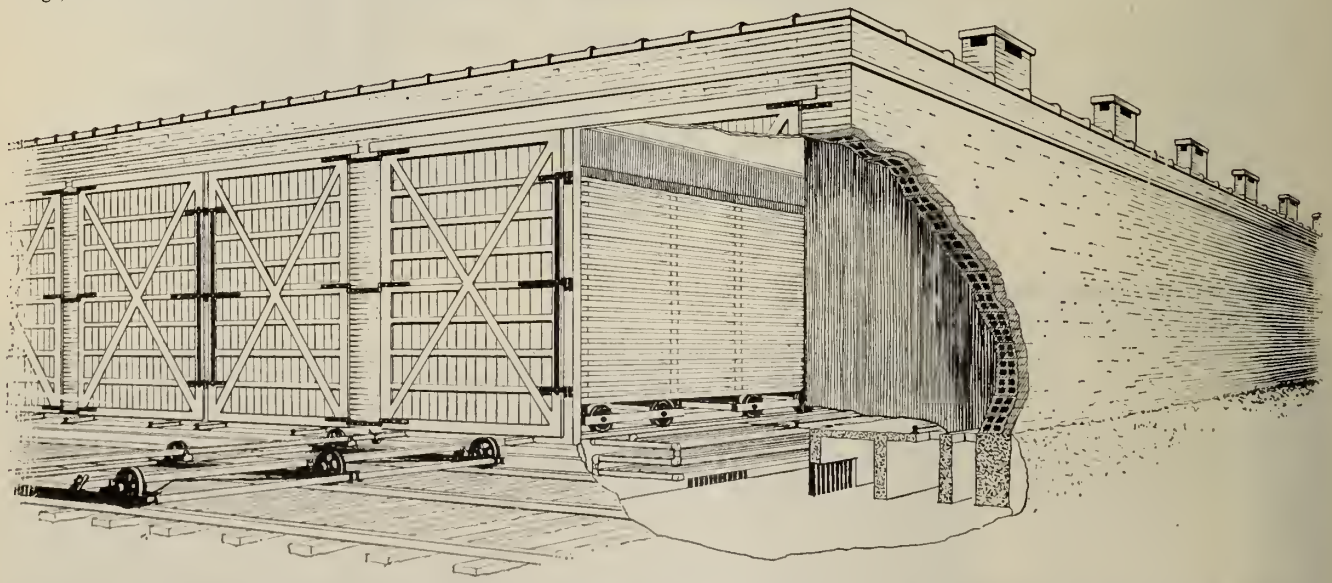
"We are drying 4/4" and 5/4" hard maple and beech from 16% to 4% moisture content in 5½ days. The condition of these lumbers was excellent with no checking, warping, or honeycombing." **Standard Action Co., Cambridge, Mass.**

From men like yourself who take just pride in their lumber dried in Cutler HALF TIME Kilns

"We are able to get 100 to 200 lineal feet more of flooring per thousand board feet than we are getting from our other kilns." **Hardman Lumber Co., Ellcins, W. Va.**



"Working in a very satisfactory manner. We could not get along without them today and turn out the amount of work we are doing." **Davis Birely Table Co., Shelbyville, Ind.**

Cutler Dry Kilns

BETTER DRYING IN HALF THE TIME

"We are drying inch hardwoods in 5 to 7 days in place of 25 to 35 days and the stock is in better condition than any we ever dried by the slow process or bought that had been dried in other makes of kilns." **J. C. Scott, Co. Ltd., Toronto, Ont.**

Communicate with us if interested

CUTLER DESK COMPANY, DEPT. B. BUFFALO, N. Y.

MR. MANUFACTURER

Here is some real Data for You on the MOISTAT SYSTEM

HAYES-IONIA COMPANY
AUTOMOBILE BODIES & SHEET METAL PARTS
GRAND RAPIDS, MICH.

August 21, 1923

The National Dry Kiln Company,
Indianapolis, Indiana

Gentlemen: Attention—Mr. Ira A. Minnick, General Manager

In answer to your inquiry of the 17th, will state that we have the six MOISTATS installed and they are giving very good results, as we are making a saving of from 30 to 50 per cent in our drying period and obtaining wonderful results in the quality of our product.

We placed these six MOISTATS in our ..... Compartment kilns which act on the down draft principle and have very poor circulation. They gave very good results, but as an experiment I cut in two ducts from the outside 6 x 36", and made three openings in the flues 10 x 12 —about eight inches above the rail level. This greatly increased my circulation and shortened the drying period considerably even at a low temperature, which resulted from the introduction of more fresh air.

I would very much like to see a MOISTAT connected to a very rapid circulating kiln, for I believe the results would be astonishing.

We dried a kiln of 10/4 quartered gum containing from 22% to 28% moisture down to 5% in eleven days and eight hours with a moisture distribution of only ½ of one per cent between core and shell. This stock was as straight as a die—no cupping, warping, case-hardening or checking. We are drying green 8/4 maple with no signs of end or surface checking, in 15 to 18 days. This formerly took from 28 to 31 days.

Following is a list of accomplishments so far:-

5/4 Maple	13.4%	and	12.6%	down to	5% in 6 days, 7 hrs.
10/4 Q. Gum	31.6%	"	31.8%	" "	4.7% in 12 days, 5 hrs.
8/4 Basswood	26.6%	"	28.4%	" "	4.4% in 8 days.
4/4 Gum	43.4%	"	39.3%	" "	4.1% in 5 days, 5 hrs. fast kiln
4/4 Gum	17.1%	"	16.0%	" "	4.7% in 6 days, 2 hrs. Slow "
5/4 S. Maple	11.8%	"	13.4%	" "	4.1% in 6 days, 5 hrs.
8/4 H. Maple	44.9%	"	43.3%	" "	4.8% in 15 days, 5 hrs. Green
6/4 Elm	17.3%	"	16.4%	" "	3.5% in 10 days,
8/4 Elm	16.9%	"	17.2%	" "	4.8% in 8 days, 7 hrs. fast kiln
10/4 Q. Gum	32.1%	"	32.7%	" "	4.4% in 14 days, 5 hrs. Slow "
8/4 Elm	41.1%	"	43.9%	" "	4.8% in 18 days, 0 hrs. Slow "

The final dry weights given are an average of three samples taken from representative stock and not from the samples carried, as we find them deceptive of true weights and merely use them as a guide to determine the true condition; when we find the representative stock has reached a moisture content of 5% or under, we bring the humidity of the kiln up from 10 to 15% by hand operation through the by-pass, close all valves and let the lumber equalize from four to twelve hours according to thickness, with most excellent results. We aim to keep our distribution down to about 1% as the lumber stays set and gives less trouble in the course of manufacturing.

We are always pleased to show this installation, explain its workings and show the results to anyone who is interested.

Yours very truly,
HAYES-IONIA COMPANY
By Chas. Longfellow

...

Every Word of This is Important To You Please Read It Carefully

Send for Descriptive Literature on the MOISTAT and List of Plants Equipped.

The National Dry Kiln Company

1117 East Maryland Street, Indianapolis, Indiana

Branches: Albany, N.Y.—Memphis, Tenn.

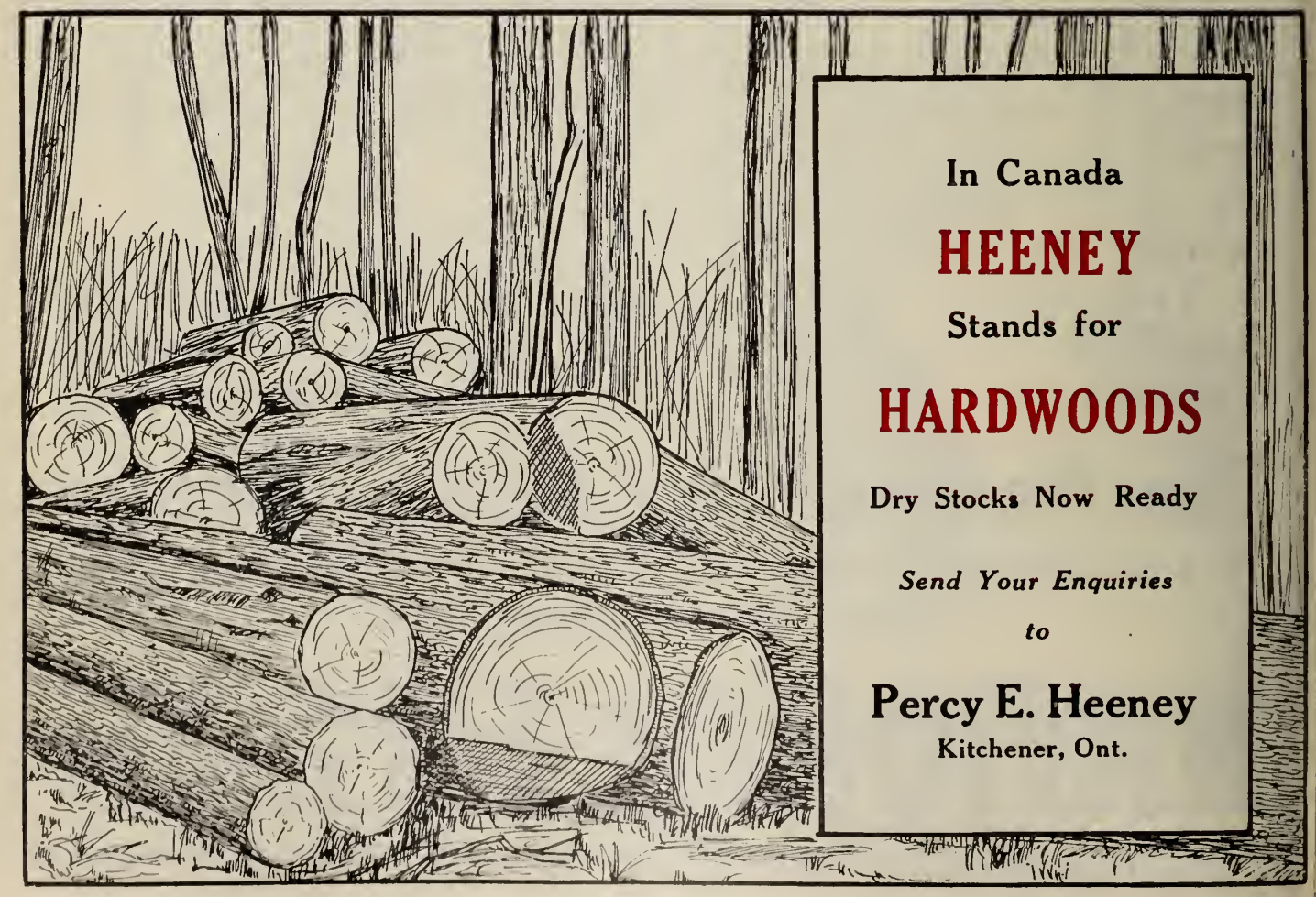
NATIONAL DRY KILNS

PEDWELL
Since 1883
Service to Hardwood Users

Dollar for Dollar

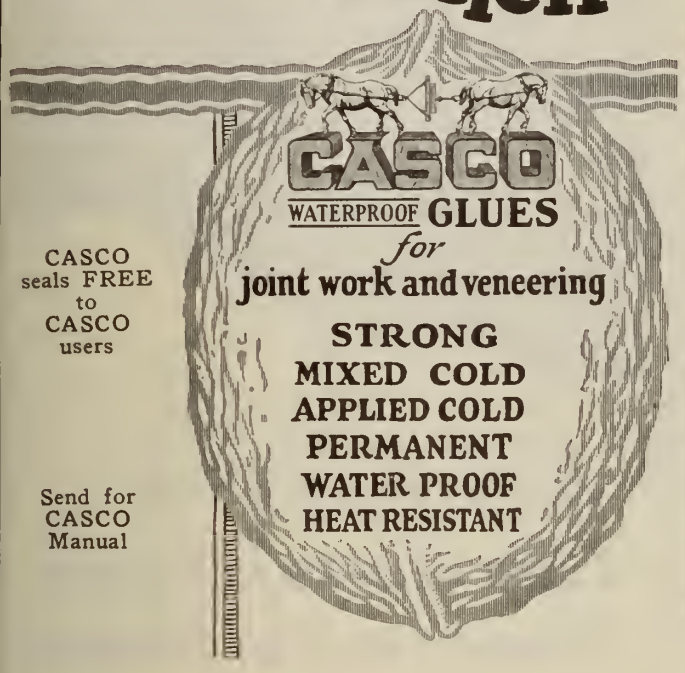
Get Our Prices

The PEDWELL HARDWOOD LUMBER CO.
Office and Yard: Foot of Spadina Ave. - - TORONTO



In Canada
HEENEY
Stands for
HARDWOODS
Dry Stocks Now Ready
Send Your Enquiries
to
Percy E. Heeney
Kitchener, Ont.

In a Nutshell-



CASCO seals FREE to CASCO users

Send for CASCO Manual

THE CASEIN MANUFACTURING CO.
Largest Manufacturers of Casein Products in America
15 PARK ROW NEW YORK
Branch Offices in Principal Cities

Humidigraph

The latest help in drying—
Ask us about it—

The STANDARD Dry Kiln Co.

1542 McCarty St., Indianapolis, Ind.

Bulldog Grip Wood Cement

Bulldog Grip Wood Cement is a Waterproof and Heatproof Wood Cement.

MIXED COLD
Requires no heat

USED COLD
Causes no mess

Strong—Uniform—Easily Prepared

Waterproof—Dustless—Economical

"Canadian Wood Cement Company Incorporated" "BULL DOG GRIP" WOOD CEMENT REGD TRADE MARK

No more heating of lumber.
No more hurry-up jobs.
No more guessing if pieces will hold.
No doubling of glue spreading.

Best glue possible for veneer door cores.

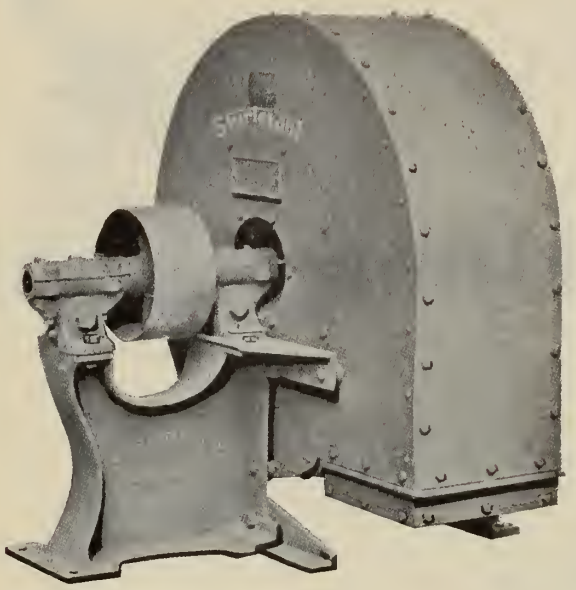
Bulldog Grip will cut your glue-room costs and do better, cleaner work. It is unaffected by moisture, heat and exposure. Write for trial sample today.

Is made in Canada with all-Canadian materials by Canadian workmen

CANADIAN WOOD CEMENT CO. Incorporated

Casein Manufacturers

279 Visitation Street, Montreal, P.Q.



What is the Insurance Rate on Your Mill?

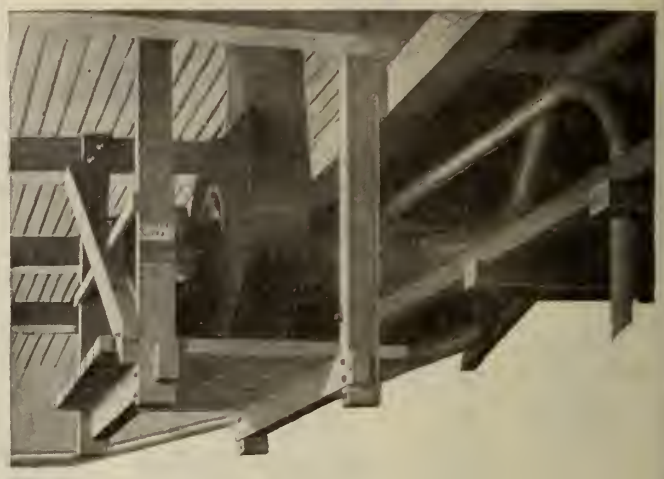
Dust and shavings on beams, rafters and shelves are dangerous fire hazards that result in higher insurance rates.

You can lower the insurance rates on your mill by installing a Sturtevant Collecting and Conveying System.

For details of further economies which this system provides, ask for folder 602—sent free on request.

B. F. Sturtevant Co.
of Canada, Ltd.
Montreal Galt Winnipeg Toronto

Sturtevant
PUTS AIR TO WORK



Work Free From Chip Marks is Being Turned out in Shops Using

Canadian Planing Mill Exhausters

whose managements report 30 to 50% saving in former cost due to excellence in fan and duct design.

Specify Buffalo Exhaust Fans and have your blow pipe company consult with our engineers to insure the above economies.

Write for whole story in Catalog No. 3

Canadian Blower & Forge Company
Kitchener, Ont. - - Canada
Toronto, Montreal, Calgary, Vancouver, St. John, Winnipeg.

"Fibro" Wood Carvings

Made in Canada

JOHN WALTER & SONS LIMITED

KITCHENER :-: ONTARIO

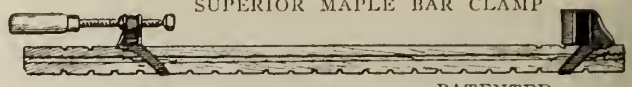
KANE VEGETABLE GLUE

The Superior Glue

Kane Manufacturing Co.

1832-42 S. Clark St.

Chicago — Illinois



PATENTED

This Clamp Adjusts Itself to any Length

Superior Maple Bar Clamps adapt themselves to use on all cabinet or fitting work because they have adjustable head and tail blocks of malleable iron that swivel so as to hold firmly at any angle.

These clamps will not mar the finest finish, and are guaranteed never to break under reasonable use. They cost no more than most ordinary clamps and give greater utility.

Write for prices and catalogue showing line of clamps and hand screws.

Profitable Territory Open Salesmen May Carry as Side Line

Superior Hand Screw & Clamp Co.

1033 W. Leonard St., Grand Rapids, Mich.

The Peter Hay Knife Co., Ltd.

Manufacture the Best

PLANER KNIVES and CUTTERS

OF ALL DESCRIPTIONS

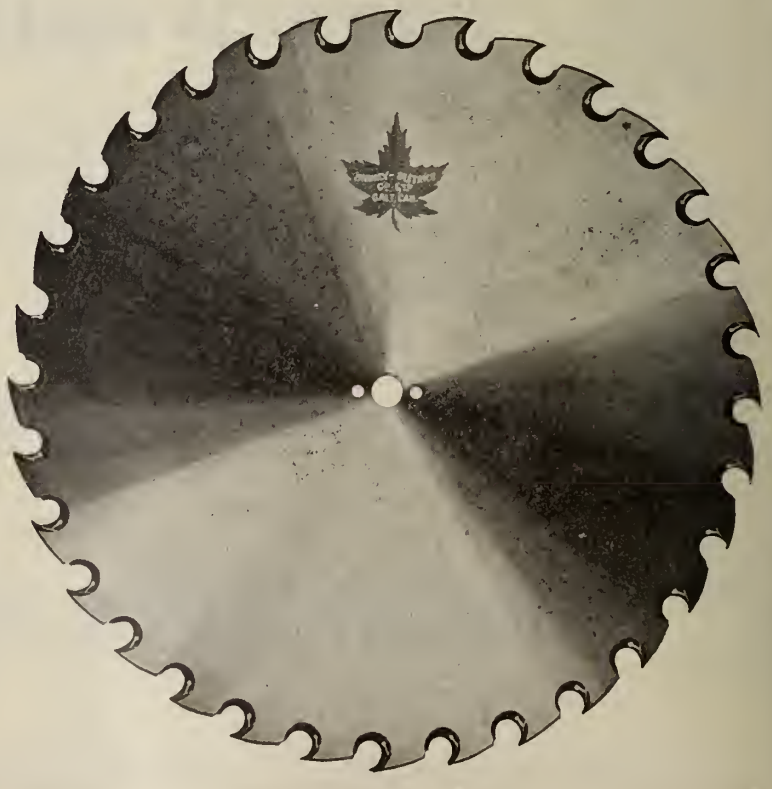
The Peter Hay Knife Co., Limited

GALT, ONTARIO

The Best for YOUR Work

MAPLE LEAF SAWS

Maple Leaf Saws are fast cutting and retain their edge longer than any other saws, because they are made from extra refined Razor Steel, tempered by our own secret process.



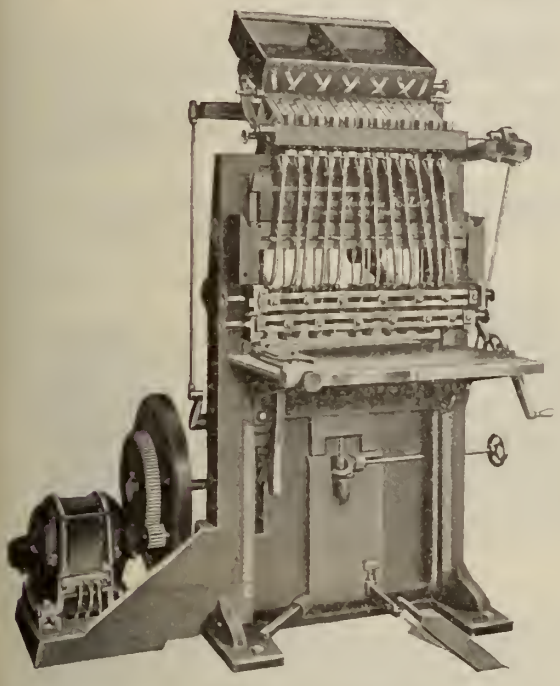
Shurley - Dietrich Ltd.

Galt - Canada

Warehouse and repair branch at Vancouver, B. C.

"The largest all-Canadian saw Manufacturers"

INCREASE YOUR BOX PRODUCTION WITH YATES NAILING MACHINES



Because of its wide range of work and quick adjusting features Yates No. 1230 Open Back Nailing Machine has met with the unqualified approval of Box-Makers.

Can be used as a cleater, framer, or bottomer. Is equipped with adjustable blocks for supporting cleats when used as framer or bottomer.

Clinching device is built into the table of machine and can be instantly adjusted. Machine can be arranged for belt or direct motor drive.

These and many other features are found in Yates Nailing Machines, which insure ease in operation, save time and labor.

P. B. Yates Machine Co. Ltd.
HAMILTON - ONTARIO

One of the Largest Blower Systems in Operation—Designed and Installed by "Toronto Blower" Experts

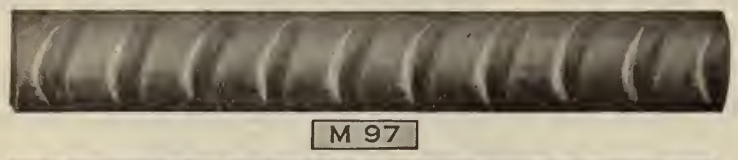
No matter how large or how complicated your requirements, it is safe to say our engineers can design a system that is at once the most efficient and economical.

The photograph above illustrates this fact. It shows the blower system in the Pembroke Shook Mills as it stands today. The first system was built ten years ago, and as the mills grew, additions were made to the blower system, all work being carried out by us.

Ask the Pembroke Shook Mills what they think of Toronto Blower Systems.

TORONTO BLOWER CO.

156 Duke St., Toronto


M 97

M 88

M 77

M 91

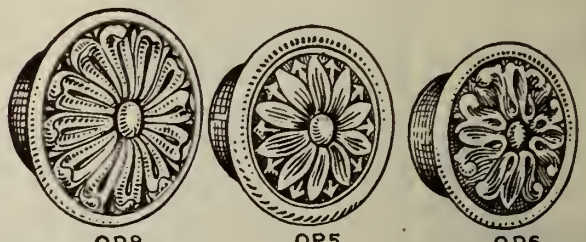
M 72

M 73

MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.

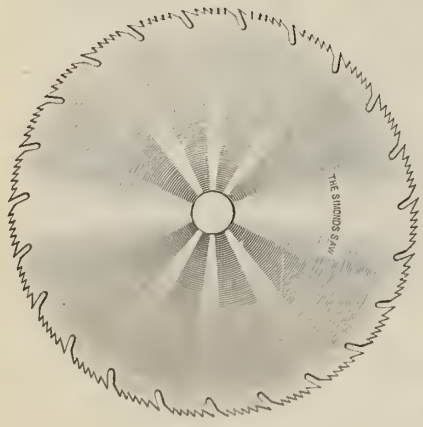

OP8 OP5 OP6

Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

SIMONDS

Novelty SAWS



High-grade Steel and perfect mechanical construction make Simonds Novelty Saws leaders everywhere. They cut smooth and hold their tension and cutting-edge longer.

We also make Concave, Groover and Special Circular Saws as well as Big Circular and Band Saws, Planer Knives and Files.

Write for Prices

Simonds Canada Saw Co., Limited

"The Saw Makers"

Montreal, Que. - St. John, N.B. - Vancouver, B.C.

OAKEY'S

Glass Paper, Flint Sand Paper, Garnet Paper

IN SHEETS AND ROLLS FOR ALL PURPOSES

Rolls 50 yards long, 18 in., 20 in., 24 in., 30 in., 36 in., 40 in., 42 in. and 48 in., wide

SHEETS, DISCS, STRIPS AND BANDS can be made to Special Sizes to suit the requirements of Purchasers

JOHN OAKEY & SONS LTD.,

WELLINGTON EMERY AND BLACK LEAD MILLS
LONDON, S. E. 1.

Canadian Agents:

F. Manley, 290 McDermott Ave. W., Winnipeg, Man. Sankey & Manson, 839 Beatty Street, Vancouver, B.C.
John R. Anderson, 36-38 St. Dizier St., Montreal, P.Q.

CARVED MOULDINGS, CARVINGS, CARVED LEGS

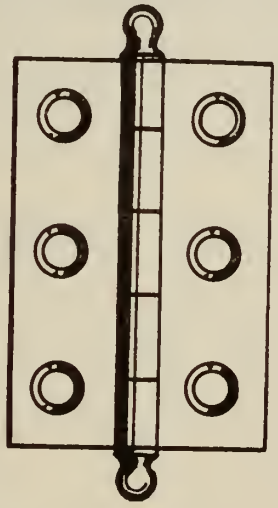
No. D-775 (Reduced One-Half)

No. D-763 (Reduced One-Half)

"KLISE' mouldings are carved, not pressed. Made in several hundred classic, period designs, in various sizes and shapes. Catalogue of legs and samples of mouldings sent on request. Send us your designs or samples of carvings for quotation.

KLISE MANUFACTURING COMPANY
Grand Rapids, Michigan

BUTTS



Both plain and ball tip in five sizes

1" 1¼" 1½" 1¾" 2"

In any desired finish

Larsen & Shaw Ltd.

Walkerton, Ont.

Manufacturers of
FURNITURE HARDWARE AND SPECIAL STAMPINGS

BLACK BROS.

CLAMPS

Where Black Bros. Clamps are known, there is no second choice. Know them.

Sold by Aikenhead Hardware Ltd., Toronto Vokes Hardware Co., Ltd Toronto J. L. Neilson & Co., Winnipeg and other leading dealers throughout Canada.

The Black Bros. Co. - Mendota, Ill., U.S.A

Subscribe for the
Canadian Woodworker

and

Furniture Manufacturer
Only $2.00 per year

PEMBROKE PLYWOOD COMPANY, Pembroke, Ont.

Manufacturers of Rotary Cut Veneers, Only the Finest Selected Logs Used, Birch Sheet Stock Our Specialty.

Prompt Service and Quality Guaranteed - - Your Correspondence Invited

A Real Opportunity

These stocks are all in good condition, liberally graded and very attractively priced. Get your share early.

			Air Dried	Kiln Dried
CHESTNUT				
1"	1s & 2s		20000′	7700′
1¼"	"		1262′	
1½"	"		1895′	
1½"	"	10"/up Step		1437′
2"	"		1250′	
1"	No. 1 Common		4347′	
1¼"	"		170′	
1½"	"		1850′	265′
2"	"		4626′	
QUARTERED RED GUM				
1"	1s & 2s	(Figured	12405′′	600′
1"	"	(Unselected)	6017′	537′
1½"	"	"	3522′	
2"	"	"	11928′	
PLAIN RED GUM				
1"	1s & 2s		2125′	
1"	No. 1 Com. & Sel.		15038′	
QUARTERED SAP GUM				
1"	No. 1 Com. & Sel.		10406′	
1¼"	1s & 2s		6454′	
2"	"		2921′	
PLAIN RED OAK				
1"	1s & 2s		10008′	6263′
1¼"	"		2426′	1084′
1¼"	"	10"/up Step	1000′	
1½"	"		3340′	
1½"	"	10"/up Step	18432′	2123′
2"	"		1881′	1038′
3"	"		180′	
4"	"		1628′	
1"	Selects 6"/up		2686′	
1"	No. 1 Com. & Sel.		2060′	4940′
1¼"	"		6328′	
1½"	"		2520′	
1½"	"	10"/up Step	1470′	
2"	"		2348′	
4"	"		1744′	
1"	No. 2 Common		5721′	601′
2"	Sill Oak 6" to 10"		1965′	
PLAIN WHITE OAK				
1"	1s & 2s		6023′	10957′
1¼"	"		846′	525′
1½"	"		2677′	
1½"	"	10"/up Step	6050′	2275′
2"	"		6524′	10′
3"	"		505′	
4"	"		1532′	
1"	No. 1 Com. & Sel.		2957′	8424′
1¼"	"		3070′	
1½"	"		1950′	
2"	"		132′	
3"	"		1498′	
4"	"		996′	
QUARTERED WHITE OAK				
1"	1s & 2s	10"/up	2408′	
1"	"		4758′	
1½"	"		1156′	1751′
2"	"		1546′	
2"	"	10"/up	616′	
1"	No. 1 Com. & Sel.		8087′	6452′
1¼"	"		5520′	
1½"	"			6328′
2"	"		195′	
QUARTERED RED OAK				
1"	Clr. Strips 3-5½"		2098′	
1"	No. 1 Com. & Sel.	(Good)	4888′	
MAHOGANY (African)				
1"	1s & 2s	(Figured)	4452′	1613′
1"	"	(Unselected)	1573′	
1"	"	(Figured)		139′
1"	No. 1 Com.	"	8529′	
1"	"	(Unselected)	5934′	
MAHOGANY (Mexican)				
1"	1s & 2s	(Figured)	749′	1030′
1"	"	(Unselected)	777′	717′
1¼"	"	"	1136′	845′
1½"	"	"	733′	
2"	"	"	1416′	421′
1"	Selects	(Figured)		266′
1"	No. 1 Com.	"		156′
1"	"	(Unselected)		500′
1¼"	"	"	1262′	
1½"	"	"	2012′	
2"	"	"	1990′	
2"	"	"	1090′	

WRITE — PHONE — OR WIRE

TORONTO HARDWOOD LUMBER COMPANY, LTD.

PHONE LAKE 1953 — OFFICE AND LUMBER YARD — 29-49 ATLANTIC AVE., TORONTO — BANDMILL: LOUISVILLE, KY.

Do You Use Dowel Screws?
Do You Use Hanger Bolts?
Do You Use Wing Nuts Separately?

Buy direct from us and save the jobber's profit.

VANDEGRIFT & MORRIS
Shelbyville, Ind.

HARDWOODS

Native and foreign hardwoods, specially selected for the woodworking and furniture trades. Also Crating Spruce, Pine and Hemlock, Canadian Birch, Basswood and Maple.

The McDonagh Lumber Co.
Confederation Life Bldg. Toronto

"Courtesy Kensington Manufacturing Co., New York"

Fine in grain, mild in texture, and consequently easy to work—Ritter Appalachian Oak is most desirable for the manufacture of high grade furniture.

Economy in Excellent Texture

One of the many excellencies found in Ritter Appalachian Oak is its favorable manufacturing quality which makes its use most economical.

Because of the ease and speed with which this oak can be worked, the little time required for the sharpening of tools, as well as the very small depreciation of investment resulting from wear and tear of equipment, the preparation of stock from this oak is accomplished at a minimum cost.

Furthermore, owing to its uniformly mild texture, Ritter Appalachian Oak machines smooth and therefore requires but little labor in scraping and sanding preparatory to finishing.

The economy realized in working Ritter Appalachian Oak, together with the fact that it possesses a fine, subdued grain which contributes much to its beauty and excellent finishing qualities, make it most desirable for general cabinet construction.

For Full Particulars Consult Our Representative or Write Us.

W. M. RITTER LUMBER COMPANY

Largest Producer of Hardwoods — **Annual Capacity—130,000,000 Feet**

General Offices **COLUMBUS, OHIO**

RITTER

APPALACHIAN OAK

From Missouri?

WALNUT

We will not tire you with a long article on the merits of our Veneers.

All Ads read just about alike—stressing **sourse of supply, quality of product, complete stocks, prompt shipments, c o u r t e s y of service, etc.**

We, too, could say all that and then some, but we won't.

Talk's cheap. We've got the goods.

WALNUT

STUMPS

BACK CUT

HALF-ROUND

ROTARY

SLICED

WALNUT

Let Us Show You

GEO. W. HARTZELL, PIQUA, O.

WALNUT SPECIALISTS

TABLE SLIDES TABLE RIMS TABLE PINS

Makers of—

The "Bruce Slide"

BRUCE WOODWORKERS, Limited, Chesley, Ont.

GROWN on the soil that produces the famous "tall corn," Iowa Walnut draws from the soil the rich plant foods that make it grow finer in texture, richer in color, and more beautiful in marking. Specify

IOWA WALNUT

Des Moines Sawmill Co.
1022 Murphy St.
Des Moines, Iowa

OAK

Plain and Quartered, Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

Oak Timbers and Planking

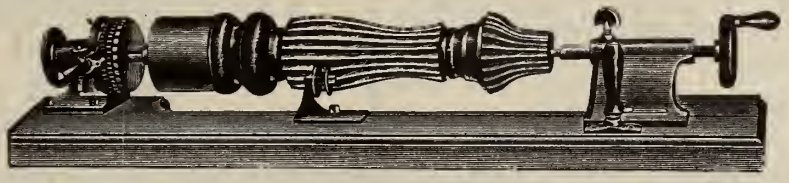
THE MOWBRAY & ROBINSON LUMBER CO.

Office: CINCINNATI, OHIO

Canadian Representative:
A. K. Johnson, Bank of Hamilton Bldg., Toronto, Ont.

FLUTING HEADS

Shaper Attachment



For fluting Table Legs, Chair Legs, Bed Posts, Columns, Balusters, etc. Swings any diameter up to 8" and may be extended to any length. Spaces automatically number 1 to 48. Ask for circulars of Fluting Heads, Twist Machine and Twist Sander.

THE SHAWVER CO., SPRINGFIELD, O.

Canadian Representative:
The A. R. Williams Machinery Co., 64-66 Front St. West, Toronto

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE, LA.

Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

BEDNA YOUNG'S TENNESSEE HARDWOODS

Our brand new modern band mill is now cutting

Qtd. White and Red Oak.
Plain White and Red Oak.
Qtd. Red and Sap Gum.

Kindly let us have your enquiries.

BEDNA YOUNG LUMBER CO.

Jackson, Tennessee

From Old Kentucky

The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

Ash, Oak, Gum, Poplar, Hickory, Walnut, Chestnut, Beech, Maple, Elm, Sycamore, Cottonwood. Quotations promptly.

J. V. STIMSON & CO.
Owensboro - Kentucky
Bandmills Owensboro; Campbellsville, Kentucky

Mercereau-Hawkins Tie Company

Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern
HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of

C. W. PETERS
Vice President and Manager of Lumber Dept.

STRONG GLUE
means
STRONG JOINTS

The most critical Woodworkers have used DUNN'S GLUES for nearly Half a Century.

Uniform Shipments Guaranteed

Let us solve your glue problems. Our Service Department is at your disposal and places you under no obligation whatsoever.

Free working samples upon request.

THOMAS W. DUNN CO.
of Canada Limited
P.O. Box 672 MONTREAL, P.Q.

OAK
GUM
CYPRESS

WE specialize in these woods and offer them to Canadian buyers in almost any grade or quantity. The quality is uniformly high and our service prompt and careful. A trial order will convince that our hardwoods are the best on the market. Write or wire for quotations.

Thurn-Maxson Lumber Co.
SOUTH BEND, INDIANA
Owners of Chas. O. Maus Lumber Company

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum
SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

Mills Coal Grove Ohio
General Offices: 33 Rector St. New York City

A Permanent Lumber Service

AFTER several years of inactivity we are now cutting on our modern fully equipped mills at Manistique and Little Lake, Upper Michigan. The timber behind these mills was purchased many years ago by the Stack interests from the then "unlimited" supply. Its quality, particularly the maple and birch, is the envy of northern mill men among whom this tract is famous.

This timber will run the mills to full capacity for fifteen to twenty years. The 40,000,000 feet annual cut will run:

15,000,000 ft. maple annually
6,000,000 ft. birch annually
2,500,000 ft. beech annually
2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually
the balace in Spruce and Tamarack.

Our exceptional service, grades, and manufacture will be maintained. "Low freight rate shipments by water to Toronto, Montreal, Owen Sound, Port Arthur, and other Great Lakes and St. Lawrence River Ports. Conveniently located also for rail shipments to inland points by the C.P.R. or Soo line."

We will be pleased to hear from old friends and from new ones who can understand and appreciate what permanent connection with such a source of supply would mean.

STACK LUMBER CO.
ESCANABA MICHIGAN

Southern Hardwoods

MISSISSIPPI DELTA GUM
The Best That Grows

OUR mills are producing some beautiful stock at the present time, and we can assure prompt delivery in any quantity.

Plain and Quartered Red and Sap Gum, Plain and Quartered White Oak, Plain Red Oak, Cottonwood, Cypress, Ash, Elm.

MISSISSIPPI VALLEY HARDWOOD CO., INC.

Bandmills: Memphis, Tenn., Clarksdale, Miss.
Sales Office: Memphis, Tenn.
MISSISSIPPI DELTA GUM The Best That Grows

The Best of Southern Hardwoods

OAK ASH
GUM ELM
MAGNOLIA
SYCAMORE
COTTONWOOD

All our hardwoods are carefully manufactured from selected stock and liberally graded. You will find our prices right and our service prompt.

Get our quotations on the next lot you need

SOUTH TEXAS LUMBER COMPANY

MANUFACTURERS OF HARDWOODS AND SOUTHERN PINE

General Sales Office: Houston, Texas Band Mills: Onalaska, Milvid, Connell, Dayton, Cleveland, and Fuqua

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

Memphis - Tenn.

We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills : Memphis, Tenn., Helena, Ark., Floyd, La.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK:

3	cars	4/4"	Fas
1	"	5/4"	Fas
5	"	4/4"	No. 1 Common
1	"	4/4"	No. 2 Common

PLAIN WHITE OAK:

5	cars	4/4"	Fas
2	"	5/4"	No. 1 Com. & Btr.
10	"	4/4"	No. 1 Com. & Sel.
7	"	4/4"	No. 2 Common

PLAIN RED OAK:

6	cars	4/4"	Fas
3	"	5/4"	Fas
3	"	6/4"	Fas
1	"	8/4"	Fas
8	"	4/4"	No. 1 Common
10	"	5/4"	No. 1 Common
2	"	6/4"	No. 1 Common

QUARTERED RED GUM:

5	cars	4/4"	Fas
4	"	4/4"	Fas. Fig.
6	"	5/4"	Fas
7	"	6/4"	Fas
10	"	4/4"	No. 1 Common
10	"	5 4"	No. 1 Common
10	"	6/4"	No. 1 Common
10	"	8/4"	No. 1 Common

QUARTERED RED GUM S.N.D.:

5	cars	5/4"	No. 1 Com. & Btr.
5	"	6/4"	No. 1 Com. & Btr.
10	"	8/4"	No. 1 Com. & Btr.

ASH:

4	cars	10/4"	No. 1 Com. & Btr.
2	"	12/4"	No. 1 Com. & Btr.
2	"	4/4"	No. 1 Common
2	"	4/4"	No. 2 Common

SAP GUM:

8	cars	4/4"	Fas
3	"	5/4"	Fas
3	"	6/4"	Fas
15	"	4/4"	No. 1 Common
8	"	4/4"	No. 2 Common
5	"	5/4"	No. 1 Common
5	"	6/4"	No. 1 Common

COTTONWOOD:

2	cars	4/4"	Fas
2	"	4/4"	x 9 — 12" Box Bds.
2	"	4/4"	x 13 — 17" Box Bds.
6	"	4/4"	No. 1 Common
2	"	4/4"	No. 2 Common

ELM:

2	cars	4/4"	Log Run
6	"	10/4"	Log Run
6	"	12/4"	Log Run

T. SULLIVAN & COMPANY
NORTHERN
Gray Elm and Brown Ash
Niagara Street Corner Arthur

BUFFALO *"Buy and Sell Hardwood in this Market."*
FAMOUS LUMBER CENTER
Unequalled facilities for rapid dispatch, by Rail, Lake or Barge Canal, on all your requirements, large or small.
SUPPLYING THE HARDWOOD NEEDS OF THE NATION

1" to 4 No. 1" Common and 1s & 2s **HARD MAPLE**
Excellent widths and lengths.
Can kiln dry and surface.
G. Elias & Bro., Inc. Elk Street to the Buffalo River **Buffalo, N. Y.**

FRANK T. SULLIVAN
Specialties
Cherry, Walnut and Pacific Coast Woods
Main Office: 600 Ellicott Square. Yard: 2598 Delaware Ave.

MILLER, STURM & MILLER
Hardwoods of All Kinds
1142 Seneca Street

YEAGER LUMBER CO., INC.
Our Specialities
Oak Poplar Ash Maple
932 Elk Street

Taylor & Crate **Hardwoods of All Kinds**
A stock of 18,000,000 to 20,000,000 ft. of Hardwoods carried at all times at our big Buffalo yards.
RAIL AND CARGO SHIPMENTS
Established 56 Years
2101 Elmwood Avenue

STANDARD HARDWOOD LUMBER CO.
Hardwoods
Prompt Shipments—from Buffalo Yards or from Mill direct to you
8,000,000 feet Dry Stock on Hand. 1333 Clinton Street

Buffalo Hardwood Lumber Co. J. B. Wall, Pres't, M. M. Wall, Treas., T. H. Wall, V-Pres't.
940 Seneca Street
We specialize in—WHITE ASH, OAK AND MAPLE

HUGH McLEAN LUMBER CO.
HARDWOODS OF ALL KINDS
Our Specialties—Quartered White Oak, Plain and Quartered Gum
940 Elk Street

ATLANTIC LUMBER COMPANY
HARDWOODS
Our Specialty—West Virginia and Pennsylvania Cherry
West Virginia Soft Red and White Oak. 1055 Seneca Street

BLAKESLEE, PERRIN & DARLING
A complete stock of seasoned Hardwoods
Including Ash, Basswood, Birch, Cherry, Chestnut, Cypress, Elm, Gum, Hickory, Maple, Plain and Quartered Oak, Poplar and Walnut.
1100 Seneca Street

We wish to announce that

MR. WALTER S. MCBEAN, 200 ST. CLARENS AVE., TORONTO is our CANADIAN REPRESENTATIVE.

If you want ASH, CHESTNUT, OAK, PLAIN AND QUARTERED, WHITEWOOD, WALNUT AND OTHER AMERICAN HARDWOODS, either Mr. McBean or ourselves, would be glad to serve you.

We operate our own band mills, dry kilns, planers and resaws.

Louisville Point Lumber Co., Inc.

1144 Fulton St. - Louisville, Ky.

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo.

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Ply Wood Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

STARK
The LAST WORD in QUALITY & SERVICE
K
BRAND

HARDWOODS
Oak, Ash, Gum, Poplar, Maple, Elm, Cottonwood, Sycamore.

CYPRESS
Lath, Lumber, Dimension.

VENEERS
Door Panel, Piano Rim, Cypress Battery Stock.

OAK FLOORING
"Chickasaw Brand"

Nothing Here is Left to Chance or Accident

Our position in the manufacture and merchandising of hardwood forest products is not accidental. We have freely expended time, money and energy in building plant facilities, working force and service organization and in acquiring alluvial cypress and hardwood timber. And our success in the foregoing explains the unfailing uniformity and inviting goodness of our

HARDWOODS - VENEERS CYPRESS - OAK FLOORING

We can promptly supply, in straight or mixed cars, the needs of fabricators and distributors in any item in the accompanying panel. We load with the utmost care and protect our clients against costly transportation delays through our expert traffic department. Order today and enjoy really dependable service and quality. They are yours for the asking.

James E. Stark & Company, Inc.
Memphis Veneer & Lumber Co.

MANUFACTURERS

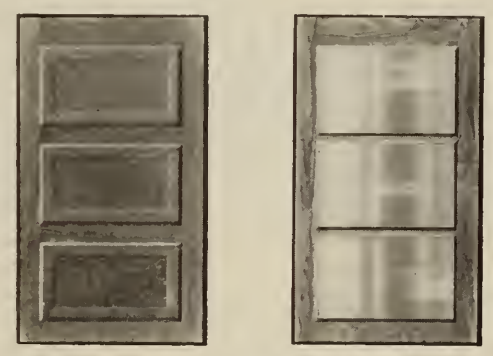
General Offices
MEMPHIS, TENNESSEE

Chicago Offices
25 N. DEARBORN ST.

"Better Use Birch"

The Popularity of Birch

When the many superior qualities of Birch are taken into consideration—when it is remembered that Birch is one of the very hardest of woods, that it is as serviceable as oak, has a beautiful natural grain and takes a finish better than any other hardwood—when these desirable features may be secured at very reasonable cost, it is little wonder that the popularity of Birch is increasing by leaps and bounds. Birch is growing in favor not only as a fine cabinet wood for use in furniture, but as a handsome wood for interior trim where the rich variety of grain and color lend themselves to the architect's plans.



Beautiful Birch

— or—

Sash, Doors and all Interior Trim

Anderson, Shreiner & Mawson

Colonial Bldg., 13 King St. West, Toronto

HARDWOOD LUMBER

Mills at South River Ontario

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

56 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar both plain and quarter sawed, Sound Wormy Chestnut, Cypress and Ash.

"Wire collect for prices or other information. Time is Money, delays pay no dividend."

DONT TAKE THE CHANCE!

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THIS SHIELD PROTECTS YOU

From Dissatisfaction and Inferior Quality in

RED GUM, OAK, WHITE ASH and ELM

STANDARDIZED GRADES

E. B. NORMAN & CO.

LOUISVILLE, KY.

BAND MILLS: ST. LANDRY, LA.
MEEKER, LA.

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We have a stock of

Wisconsin Brown Ash and Yellow Pine Panels

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AMERICAN PLYWOOD CORPORATION

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OTIS
TRADE MARK

Tabasco
Honduras

ESTABLISHED 1867
INCORPORATED 1886

Laguna
Mexican

MAHOGANY

Rarely are such stores of precious wood to be found as may be seen in our yards. Across the seas from tropic lands it comes. From thick jungles where the light of day but dimly penetrates and where tangled native paths make difficult the bringing out of timber. Here the black man labors, risking life from jungle dangers, that supplies will not diminish and your orders may be filled.

Twelve million feet per year is the capacity of OTIS mills. An adequate supply is always on hand for prompt shipment. Get our prices.

Otis Manufacturing Company

Peters Avenue and The River

NEW ORLEANS, LA.

Chicago Office: Room 208, 128 N. Wells Street

Know the hardwoods you buy But How?

How can you know, when you buy hardwood lumber, that it is going to be *uniformly dependable?*

Before you buy hardwoods you have a right to ask these questions:

1—Does the class of timber used produce excellent lengths and widths.?

2—Are they manufactured in the manufacturer's own hardwood mills, equipped with modern band machinery?

3—Is thoroughness given every detail of manufacture?

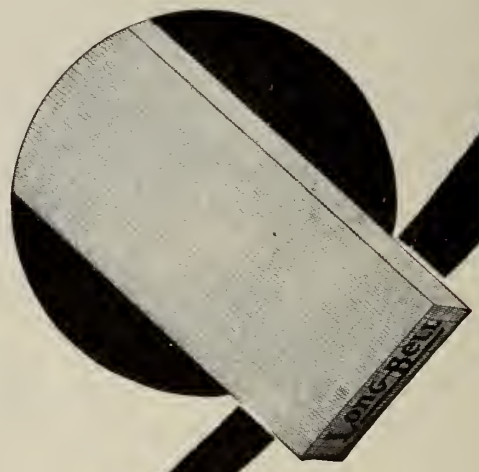
4—Is particular care given to uniformity of thickness—carefully edged, equalized and trimmed?

5—Are they end-butted with mitre-toothed saws?

6—Are they carefully sorted at the chains?

7—Is every detail in sticking and drying carefully observed to insure best results?

8—Are they carefully graded, inspected, and carefully handled?



Long-Bell Hardwoods can be identified by the Long-Bell trade-mark on the end of the piece.

Long-Bell Trade-Marked Hardwoods answer "YES" to these questions.

The Long-Bell Lumber Company
R. A. LONG BUILDING Lumbermen since 1875 KANSAS CITY, MO.

Hardwood No. 6 (23)

KIRBY-BONNER LUMBER COMPANY

HOUSTON - TEXAS

Manufacturers ***Exporters***

SOUTHERN HARDWOODS

Over One Billion Feet of Hardwood Timber

— *Our Specialties* —

Soft Textured Neches Valley Red Gum
Steam Cured Bright Sap Gum

"KIRBY FOR QUALITY IN QUANTITY"

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

TENNESSEE SCENTED CEDAR

1 in.	40,000
1¼ in.	1,500

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	51,000	10,500	161,000	175,000
1¼ in.	27,000	.....	9,000	21,000
1½ in.	30,200	100	23,00	96,000
2 in.	6,000	.....	9,000	65,000
2½ in.	4,500	.....	4,300	3,000
3 in.	21,700	.....	4,500	4,000
4 in.	9,300	.....	900	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,600	.....	3,000	.....
1 in.	68,000	.....	163,000	125,000
1¼ in.	3,000	450	70,000	57,000
1½ in.	24,700	1,600	79,000	.....
2 in.	5,000	.....	18,000	32,000
2½ in.	2,000	.....	.....	.....
3 in.	1,300	.....	.....	.....
4 in.	1,500	.....	300	.....

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
5/4 in.	14,000	7,000	15,900	3,000
4/4 in.	51,000	160,000	.....	23,000
1 in.	91,000	124,000	44,200	131,000
1¼ in.	53,000	14,600	.....	.....
1½ in.	30,000	16,000	.....	1,500
2 in.	19,000	61,000	3,000	10,000
2½ in.	3,200	3,200	.....	.....
2½ in.	108,000	39,000	2,000	1,800
3 in.	26,000	22,000	.....	.....
3½ in.	4,500	3,000	.....	.....
4 in.	44,000	17,800	.....	.....

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	50,000	224,000	1,500	.....
5/4 in.	.....	53,000	21,000	2,400
1 in.	76,000	64,000	15,500	71,000
1¼ in.	55,000	94,000	2,000	2,100
1½ in.	50,000	74,200	5,000	2,500
2 in.	63,000	132,000	26,000	10,000
2¼ in.	1,500	1,400	.....	.....
2½ in.	94,100	34,000	.....	.....
3 in.	53,800	35,000	5,000	12,000
4 in.	27,600	10,600	.....	.....

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	.....	.....	4,700	500
1 in.	9,200	6,400	14,000	1,400
1¼ in.	5,900	.....	5,900	.....
1½ in.	400	.....	4,000	.....
2 in.	.....	.....	7,400	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	.....	.....	.....
¾ in.	3,900	.....	2,300	3,000
5/4 in.	.....	.....	400	800
1 in.	91,000	400	30,000	5,700
1¼ in.	21,000	27,300	79,000	5,800
1½ in.	18,000	500	29,500	200
2 in.	700	.....	22,000	5,700
2½ in.	2,000	.....	.....	.....
3 in.	2,000	.....	1,200	.....
4 in.	2,600	.....	200	.....

SAP GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	12,000	26,500	.....	2,500
1¼ in.	15,400	15,000	2,000	9,000
1½ in.	.....	1,800	5,200	.....
2 in.	8,100	7,400	300	4,700
3 in.	.....	.....	.....	.....

QUARTERED SAP GUM

	1 & 2	No. 1C	No. 2C
4/4	.....	1,800	.....
5/4	.....	9,000	.....
8/4	.....	18,000	800
10/4	.....	15,000	14,300
12/4	.....	300	.....

POPLAR

	1 & 2 18" up	1 & 2	No. 1 Com.	Bright Saps
¾ in.	.....	4,000	2,700	.....
5/8 in.	1,000	14,000	12,100	50,900
1 in.	.....	104,000	54,000	34,700
1¼ in.	2,300	10,000	89,000	30,000
1½ in.	5,300	4,000	.....	32,000
2 in.	.....	22,300	5,000	90,800
2½ in.	.....	.....	.....	11,800
3 in.	.....	2,600	8,000	17,000
4 in.	.....	6,000	6,500	9,200

Also Large Stocks of Ash, Basswood, Beech, Birch, Hard and Soft Maple.

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. **Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY**

Oxen Hauling Out of the Mire

Southern Hardwoods
and
Genuine Louisiana Red Cypress

GUM — OAK — WHITE ASH — SOFT ELM — COTTONWOOD

GLIMPSE NUMBER NINE INTO THE HARDWOOD OPERATIONS OF

E. SONDHEIMER CO.

(Cable Address—Sonderco-Memphis)

MANUFACTURERS

Band Mills:
SONDHEIMER, TALLULAH
ALEXANDRIA, LA.

Office and Distributing Yard:
MEMPHIS, TENN.
Chelsea and McLean Avenues

BANNING

FOR

OUR stock of WALNUT is complete. If you want real value, give us a chance on your next order.

Quality and prices are right.

Canadian Representative

A. E. Klippert, 11 Laxton Ave. Toronto, Ontario

FOR

HARDWOODS

We have the Following Items in Dry Stock

At our yards in Bay City and are in a position to make prompt shipment upon receipt of order:

HARD MAPLE	4/4 to 10/4	No. 1 Common & Better.
BEECH	5/8 to 8/4	No. 2 Common & Better.
BIRCH	4/4 to 12/4	No. 2 Common & Better.
BASSWOOD	4/4 to 8/4	No. 2 Common & Better.

Stock piled No. 2 Common & Better can be sorted for grades and shipped as wanted.

We have 17 dry kilns and fully equipped planing mill.
We are in position to furnish and will be pleased to answer inquiries for any of the Northern Hardwoods.

KNEELAND-BIGELOW COMPANY

BAY CITY - - MICHIGAN

DODGE

Quality and Service

The fact that a very high percentage of the largest and most important power users in Canada have continued to patronize us for so many years without a break is our very best reason for inviting the patronage of others when in the market for

Power Transmission Machinery and Elevating and Conveying Machinery

Our complete Catalogue for the asking

DODGE MANUFACTURING CO. OF CANADA, LIMITED

Head Office and Works—Toronto
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Distributors: Chapman Double Ball Bearings Ex Our Stock

QUARTERED WHITE OAK
15,000′ 5/8″ No. 1 Com.
6,000′ 3/4″ No. 1 Com.
16,000′ 4/4″ FAS.
31,000′ 4/4″ No. 1 Com.
12,000′ 5/4″ FAS.
26,500′ 5/4″ No. 1 Com.

PLAIN WHITE OAK
46,000′ 4/4″ FAS.
96,000′ 4/4″ No. 1 Com.
96,000′ 4/4″ No. 2 Com.

PLAIN RED OAK
5,000′ 1/2″ No. 2 Com. & Btr.
30,000′ 3/4″ FAS.
75,000′ 3/4″ No. 1 Com.
67,000′ 4/4″ FAS.
96,000′ 4/4″ No. 1 Com.
97,000′ 4/4″ No. 2 Com.
75,000′ 4/4″ Sound Wormy.

QUARTERED RED GUM
24,000′ 3/4″ Com. & Btr.
40,000′ 4/4″ FAS.
85,000′ 4/4″ No. 1 Com.
52,000′ 5/4″ No. 1 Com.
45,000′ 6/4″ FAS.
39,000′ 6/4″ No. 1 Com.
55,000′ 8/4″ FAS.
33,000′ 8/4″ No. 1 Com.

PLAIN RED GUM
13,000′ 4/4″ FAS.
80,000′ 4/4″ No. 1 Com.
24,000′ 4/4″ No. 2 Com.
13,000′ 5/4″ FAS.
76,000′ 6/4″ No. 1 Com.
70,000′ 5/4″ No. 1 Com.

QUARTERED SAP GUM
10,000′ 1/2″ No. 2 Com & Btr.
31,000′ 5/4″ No. 1 Com.
17,000′ 6/4″ FAS.
35,000′ 6/4″ No. 1 Com.

"BELLGRADE"

Bellgrade lumber comes from the famous Yazoo Valley. It is manufactured in thoroughly modern mills by men of life-long experience and is graded and shipped to N.H.L.A. Standards. In fact from the felling of the tree to the finished product "quality" is the one big factor.

Give Bellgrade a trial and you can't possibly be disappointed.

BELLGRADE LUMBER COMPANY
Memphis - Tenn.

CANADIAN
WOODWORKER
and
Furniture Manufacturer

A Monthly Publication of Trade News and Practical Information, reaching the factories producing Interior Finish, Doors, Sash, Flooring, Boxes, Aeroplanes, Furniture, Pianos, etc.

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The Difference in Plants

Within certain limits a plant is an expression of the personalities of those responsible for its inception and operation. This is particularly true as applied to plant methods and organization. The characteristics of the management are usually reflected in the workings of the factory, modified and influenced to some extent by the personality and attitude of those in charge of the various phases of the work.

Those who have had an opportunity of visiting around are usually impressed by the difference which is to be noticed in various woodworking plants. This is not so much in connection with the lines manufactured or the equipment in use, as the way in which the factory is maintained and operated. This difference is the expression of the varying personalities which go to make up each plant organization. How do you measure up as expressed by the plant or department for which you are responsible.

The story is told of a man who prepared a treatise on plant organization dealing with various phases of this important subject, and stressing strongly the value of operating each machine to capacity. In this connection emphasis was laid on the necessity for keeping the factory clean and orderly, not only because of its effect on output, but because of its influence on the workmen. The article was good, but when the author was interviewed in his plant it was necessary to wade through several feet of shavings in order to reach him. He may have been working under a handicap, but the condition of the plant for which he was responsible did not give a favorable impression of the man himself.

The way in which the various machines are handled and operated is an important factor. Because one plant is not as modern as another, should, but does not always indicate the degree of productiveness which is secured. In some instances some of the older types of equipment are being handled to good advantage with surprisingly satisfactory results. Again in many plants full advantage is not being taken of the modern machines that have been provided with the result that the machine output suffers both in quantity and quality. This should not be for the degree of productiveness obtained and the production costs secured, depend to a large extent upon the manner in which the equipment is utilized.

Another point is that the development of certain plants has been retarded by the attitude of some of the practical men in charge of the different departments. The management may be progressive and may appreciate the advantages of new equipment and improved methods, but any attempt to install new machines or introduce new methods is strongly resisted by the very ones who should welcome such changes. The fact that new methods or modern equipment is being considered for a certain department, is not a reflection on the person in charge of that particular part of the plant, though apparently this is often the way such a move is viewed, but rather it presents an opportunity for that particular department to produce more and earn more, and to this extent the person in charge is enabled to make himself worth that much more to the organization. If the management is far-sighted enough and sufficiently strong to overcome this tendency and insist that all beneficial changes be put into effect, all well and good, then that plant expresses more or less accurately the personality of that management. On the other hand, as is often the case, the management takes the easier course and stays with the old order of things. The short-sightedness of such department heads hinders the advancement and development of the business on which their own prosperity depends.

All connected with any manufacturing organization should take pride in keeping that plant well to the front, in insuring that the methods used are as advanced as they should be, that the machinery is the best possible for the product in hand, and that all the equipment provided is used to the very best advantage. When this attitude becomes more prevalent there will not be such a marked difference in plants, for as suggested this difference is usually more in the personnel than in the equipment.

A Dollar Saved

"I attribute a large part of our success to the fact that we have always watched our buying carefully," recently remarked a prominent manufacturer. "By that I do not mean that we made a policy of driving close bargains but rather that we studied the markets, kept a fairly accurate record of the materials reveived so that we knew what make and grade worked out to the best advantage and whenever possible brought competition to bear in our buying."

"This latter is an important point. For instance, in buying a number of cars of lumber, where a difference of a few dollars a thousand meant several hundred dollars saved, we made a practice of checking through the trade papers in our files and writing those lumber manufacturers who were offering the particular stock in which we happened to be interested. The difference in quotations received were often quite material so that for an expenditure of a few cents in stamps and stationery we often saved worthwhile sums. The same policy was followed in nearly all our purchasing."

Can you say the same? The advertising columns of the "CANADIAN WOODWORKER" tend to keep you in touch with the material or equipment you require. Are you using this feature of your

paper to good advantage? As suggested, it is a good idea to check over the various advertisements and write those who are offering the lines in which you are interested. You may strike some manufacturer or dealer who is "long" in the very material you require. In any event there is likely to be a variation in the quotations received. The savings to be effected through adopting this procedure as standard practice are bound to have a beneficial effect on your profits.

Furniture Market of New Zealand

The prospect of Canadian manufacturers of furniture selling their products in New Zealand is not very encouraging. A few years ago considerable quantities were imported, but this trade has been diminished and in 1922 the total value of imports of furniture, not elsewhere included in the classification, exclusive of billiard requisites, materials for making furniture, such as blinds webbings and tapes, and picture and photograph frames was £19,738. Of this amount £11,745 is credited to the United Kingdom, £2,465 to Australia, £2,109 to Canada, and £2,056 to the United States.

The bulk of furniture used is made in New Zealand. This is accounted for by the fact that there are numerous native woods adapted to this work, and further that the freight charges on furniture are high because of the size of the packages, ocean freight being payable on the cubic measurement. There are certain lines of furniture which are imported, notably bentwood chairs, and office equipment such as filing cabinets.

In 1920 there were 225 establishments with 2,057 employees making furniture, native woods and imported oak being the principal raw material used. There is not much hope for manufacturers competing in this market except in such furniture as can be "Knocked down" for shipment. Chairs and office equipment lend themselves to this, and it should therefore be possible for Canadian exporters to secure a good share of this business. As to chairs, the types in use are the cheaper grades of bentwood and the better grades of office chairs. There is a very good demand for revolving and tilting office chairs and for typists' chairs, of the style used in Canada. Competition in bentwood chairs from Czecho-Slovakia is quite keen. The finish of the Canadian article is stated to be inferior to that purchased from Europe.

Very little Canadian office equipment is sold. English and United States steel filing systems are being displayed and are apparently meeting with considerable success; some importers have called at this office recently with respect to Canadian equipment and it is hoped that more will be in evidence in this market at an early date. The demand for school furniture is limited.

London to Have Furniture Exhibition

The retail furniture dealers of London, Ont., have decided to hold a Fall furniture exhibition following closely the one being held at Windsor, Ont. The armories at London have been secured and it is proposed to hold this show during the week of September 20th to 29th. The partitions and booths used at Windsor will be shipped to London, and as the London armories are about the same size as the one in which the Windsor exhibition is being held, these fittings will work in to good advantage. R. M. Jaffrey of Windsor, who has been so successful in organizing the Windsor display is to have full charge of the London exhibition.

Wood Conservation at Ford Plant

The Ford Motor Co., operates a salvage plant and all lumber waste and wood of every sort is referred to this department for reclamation, chiefly in the form of boxing and crating, for which 300,000 ft. of reclaimed lumber is used daily and only 200,000 ft. of new lumber. Formerly 600 different styles and sizes of boxes and crates were used for shipping but a simplification program has reduced the number to 14 which carry 95 per cent of the shipments and some of these standardized sizes have as many as a hundred different uses. The other 5 per cent of shipments are made in 45 different sizes of boxes and crates which are of course used to much smaller volume. Burlap bags have recently been adopted for some shipments which formerly required 5,000 boxes daily. The receiving department carefully saves all containers which are taken apart and the lumber reused. A Ford crate or box will frequently have several different kinds of wood in it. Recently 1,500 worn out box cars of the Ford railroad, the Detroit, Toledo and Ironton, were wrecked and the lumber in them referred to the salvage department for conversion into box material.

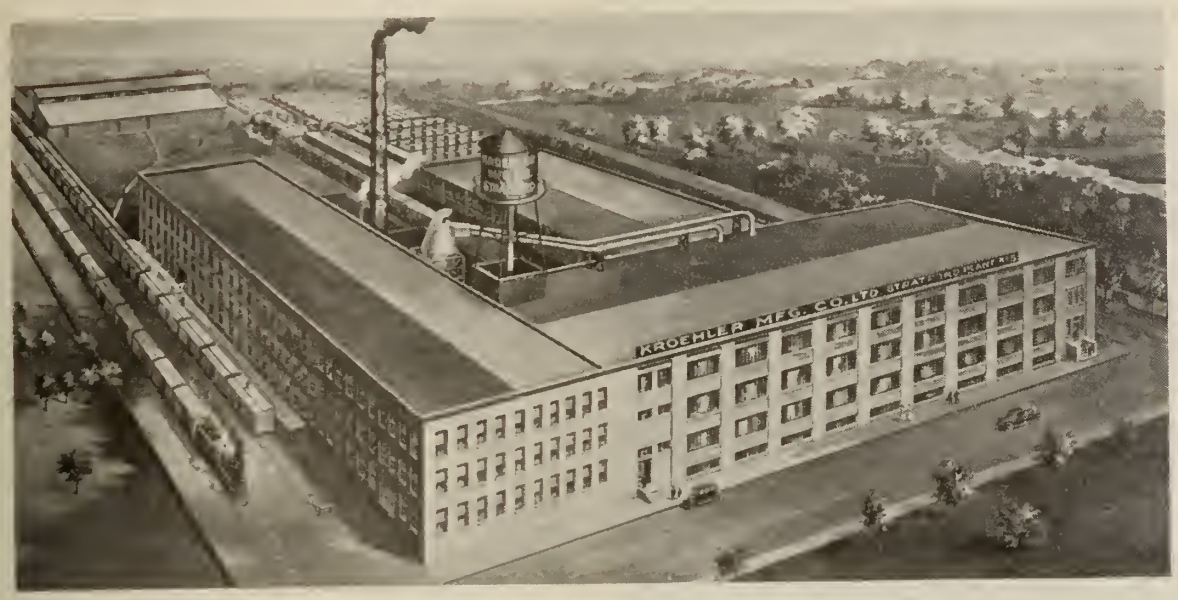
Like everything else about the Ford plant the salvage operation is systematized. It is carried on in a building 80 ft. wide and 700 ft. long through which runs a continuous conveyor which runs past a number of different sawing stations. At each station the workmen take off the boards best suited to the size they are sawing. Scraps from the sawing stations are also placed in the conveyor which at the end of its run is carrying only scrap and this scrap goes into a large hog which shreds this small percentage of waste material into fuel for the furnace room. Similar conveyor systems are used for the completed boxes. Each of the several manufacturing departments assembles its own crates, the crate pieces being supplied to it from the salvage department in proper dimensions.

Wood Waste is Expensive Fuel

The managers of many woodworking plants believe that wood waste has sufficient value as fuel in the power plant to offset a large part its loss as raw material for manufacture.

As a matter of fact a pound of bone-dry wood has a fuel value equal to only 62 per cent of that of a pound of coal. Under the boilers the value of a thousand board feet of waste from oak lumber, weighing 3,800 pounds and costing $62.50, would be only $7.66, the amount required to buy its heat equivalent in coal. It is also true that the cost of handling wood waste in the boiler room is higher than the handling cost for coal.

Only in rare cases will the fuel value of waste from a thousand feet of lumber pay the freight, mill to factory, on the extra material required to produce a thousand feet of clear cuttings.



View of electrically operated plant of the Kroehler Mfg. Co., Limited, Stratford, Ontario

An Electrically Driven Woodworking Plant

Individual Electric Drive and Direct Connected Motors Used in Stratford Plant Full Advantage Taken of Latest Type of Equipment—Incentive Rates in Effect at Many Operations

One does not naturally associate upholstering with fine woodwork and modern woodworking equipment. In view of that an inspection of the woodworking plant operated by the Kroehler Manufacturing Co., Limited, Stratford, Ont., in connection with their large upholstered furniture factory might give cause for wonder and give rise to expressions of approval. Here we find a woodworking department that would be a credit to any large, progressive woodworking plant. The equipment is of the latest type; it is operated in conformity with the most modern practice and the work is so planned and the operations so developed that full advantage is taken of the machines provided, resulting in high productiveness and low costs.

Power is available in the form of electric energy, generated from steam in their own power plant, three phase, sixty cycle current being developed in excess of 200 H.P. It is only to be expected then that the plant is electrically driven. They have gone further than that however, and have not only adopted the individual motor drive wherever practical but have installed considerable equipment in which the motors are direct connected to the main spindles or form an integral part of the machine itself. Thus on the double surfacers is to be found a separate motor attached to each cutter head, while on the three drum under-feed sander a motor is coupled to each drum. In the case of the shaper the motor is built right into the base of the machine.

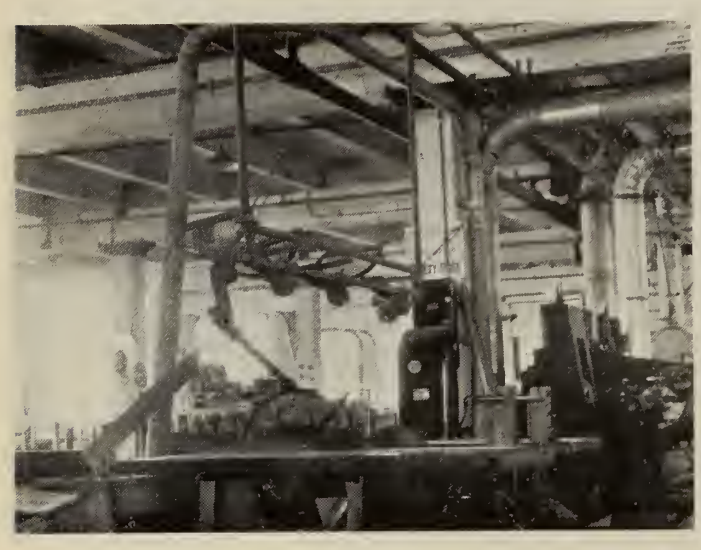
Points in Favor of Motor Drive

Probably one of the most noticeable features is the absence of belts and shafting. At first glance one wonders if the equipment is in operation for there is nothing in the shape of moving belts to catch the eye. The result is certainly pleasing and seems to make the shop a brighter, better place in which to work. This is further enhanced by the whiteness and cleanliness of the walls and ceiling.

There is much to be said for, and against, the electric drive, particularly the individual motor drive. It is convenient, flexible, permits of any arrangement of layout, conserves power, eliminates the upkeep cost and power loss which must be met when line shaft and belt transmission is used and in other ways provides an economical, satisfactory drive. One objection often made is that where individual motors are used for each machine, each piece of equipment must be motored for maximum load. This increases the initial investment required for motors and also tends for a higher power bill, for the total connected load has a direct bearing on the amount of the monthly power charges. When asked if they found the individual motor drive as adopted economical the reply was, "Our records give us an accurate account of our power costs, including interest on investment and overhead, so that the best reply we can give is that we never think of buying a new machine without purchasing a motor to drive it."

The fact that they generate their own power is not a factor as far as power cost is concerned. They estimate that were they to purchase energy from outside sources the total annual cost of such electric power and together with the cost of heat for factory and kilns would be about the same as their present annual cost for the same services and heat. By generating their own energy they are able to secure sixty cycle current, which explains why they have been

able to use direct connected motors on their high speed cutter spindles. With twenty-five cycle current the maximum R. P. M. available for a direct connected load is in the neighborhood of 1400-1500,



Double cut-off saw showing special splitter used behind the saws. Card on post reads "Use your guards or lose your job"

which speed is far too low for the majority of woodworking cutters.

Practically all lumber is piled on kiln trucks or bunks directly from the railway cars. The material is then placed on the green storage tracks where it remains until needed. Each car is identified with a tag which gives the kind of stock, thickness and length, quantity, when received and name of shipper. The drying equipment consists of a battery of four Grand Rapids compartment kilns, equipped with automatic recording instruments. They are well satisfied with the results being secured.

Lumber Handling Costs Kept Low

From the kilns the stock is run to the dry storage space. This is heated and is divided into different compartments. Only one kind of wood is kept in each compartment, which makes all stock available as required, with a minimum of labor. As the material leaves the dry storage building it enters the factory proper.

The first operation is double surfacing on a Yates double surfacer. As the car of lumber is run into the factory it is placed on a lumber lift which has been installed directly behind the surfacer. The whole car is lowered until the top is level with the bed of the planer. The material is then always directly behind the machine and is kept at a convenient heighth. As a result the production of the planer is about fifty per cent. higher than it would otherwise have been and the services of one helper have been dispursed with.

As the stock leaves the double surfacer it is placed on factory trucks and goes to the swing cut off saws, which are directly behind the planer. From here the pieces go to the rip saws which are of the chain feed, straight edging type, one being a Mattison with a built-in motor, the other a Yates with direct connected motor. Many economies are effected through the use of these machines, due to a saving in stock and to the elimination of subsequent operations. An automatic glue jointer is used for jointing the thicker stock, but all joints in material up to 4/4 are made directly from the chain feed saws, without jointing or further correcting. This applies to exposed joints that are visible on the finished articles as well as to concealed joints in the core material. The saving effected includes the cost of the jointing operation as well as the usual stock allowance for jointing when that is necessary. Two clamp carriers take care of the clamping operation, a Taylor and a Billstrom.

The final surfacing and sizing is next in order. This is done on a Whitney double cabinet planer, both sides being dressed at one operation. The heads are of the round type and fitted with four high speed knives. Every attention is given to keeping the knives sharp and they are jointed at frequent intervals to insure that all are cutting. The result is that the work done on this machine is so smooth and fine that only fine sandpaper is required on the Yates endless bed sander for the finish sanding. Not only that, but it is difficult to determine which side of the stock was surfaced against the grain. A further economy is effected by grinding the knives without removing them from the machine. A portable grinder is used for this operation. These features indicate what can be accomplished by using modern equipment as it should be used and is in contra-distinction to some plants which do not take full advantage of the new equipment they install because they do not advance their methods to enable the equipment to be worked to its best advantage.

Modern Machines Used Throughout

Other equipment is as follows: Bell dowel machine, automatic dowel trimmer for cutting the dowels into short lengths, Whitney scraper, Yates moulder with hopper feed, American double cut-off saw, Smith power feed double end saw, Yates edge sander, Yates three drum endless bed sander, several band saws, Advance shaper with built-in motor, belt sanders of various kinds, air pulleys sander and different types of boxing equipment including multiple spindle machines and a Bell-Automatic double end borer that will bore one or more holes in both ends of a piece

One of a pair of Sturtevant exhaust fans each driven by a Crocker-Wheeler motor

at one operation and which has a capacity of nineteen pieces a minute. In addition there is a complete line of knife and saw sharpening equipment including a portable knife grinder by which the planer and

other straight knives may be ground without being removed from the machine.

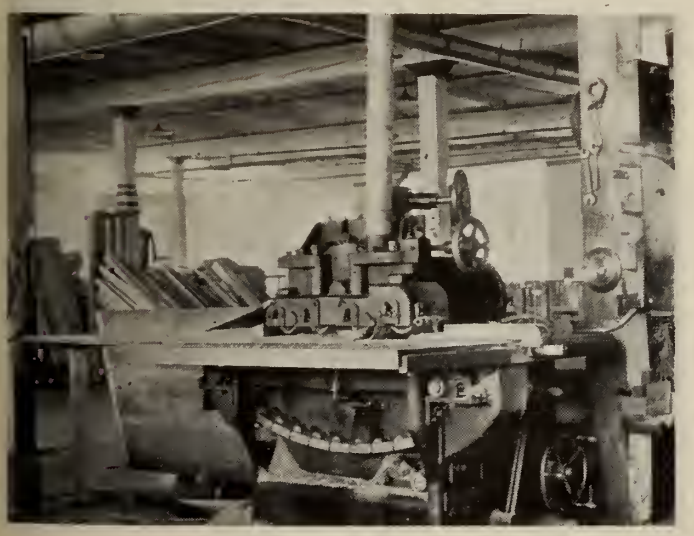
The air-pulley sander is a handy machine. It is used largely for cleaning up and finish sanding irregular pieces such as Queen Anne legs and other shaped parts. In reality it is a pulley to which a pneumatic tire has been attached. The sand paper is applied outside this. The resiliency and elasticity of the air pulley enables it to conform to the shape being sanded. The air pressure is varied for different curves and shapes.

Factory Trucking is Well Planned

The floor is concrete and is kept free from shavings and wood waste. Trucking aisles are marked plainly with painted lines. Both the lift type and factory trucks are used. The latter is employed to handle stock from machine to machine and any material that will move steadily through the department is kept on the wheeled trucks. The platforms are used chiefly for material and parts that may remain in the machine department for some time. Such stock is piled on the platforms and moved with the lift truck to some convenient storage area, there to remain until required. This seems to be a very good combination for all factory trucks are then available, none being tied up with what might be termed dead material.

As will be noted from the accompanying illustrations all the machines are connected with the shavings exhaust system. Two large Sturtevant fans, direct connected to Crocker-Wheeler motors take care of all shavings and saw-dust in a satisfactory manner. The whole shavings exhaust installation is Sturtevant. Attaching the motors direct to the fan shaft eliminated the troubles so common to the shavings exhaust drive, resulting in an unusually satisfactory installation.

"Safety First" is the rule throughout the plant. All machines are adequately guarded and rigid instructions are in force pertaining to the use of the



The motor is built right in as an integral part of this Mattison straight edging saw

guards. On the double cut off saw shown herewith, will be noticed a type of adjustable saw knife or splitter that was developed in that plant and which has worked out satisfactorily, in fact it has been favorably commented on by the safety inspector. Regular meetings of the shop safety council are held every month and every effort is made to promote and maintain a lively interest in all matters pertaining to safety or first aid. The degree of success which attend their efforts may be judged from the fact that

A motor is direct connected to each drum of this Yates endless bed sander eliminating all belts

last year they were granted a rebate on their assessment under the Workmen's Compensation Act.

A suggestion box has been productive of many good ideas, a number of which have been developed to advantage in the plant. The employees are paid for any suggestions that are found useful. It is often surprising the value and practicability of the ideas that are outlined. Not only is the suggestion box productive of much good but through it the men are given an incentive to be progressive and develop new methods and ideas. This tends for increased productiveness all around.

One rather good idea that is in use is that all patterns are painted bright red. Having them a distinctive color prevents the pattern becoming mixed with the pieces on order, assists the workman in quickly putting his hand on it and in other ways work out advantageously.

A considerable proportion of the work is done on piece rates. These are set by the engineering department of the main U. S. plant of the Kroehler group. Ordinarily rates set in one plant are not of any value when applied to another factory because the equipment, the feeds and speeds and the class of work invariably differ. In this case the equipment is the same as that found in the American plants and the speeds and feeds are so synchronized that the rates set in the main plant work out fairly well in the Stratford plant.

The plant of the Kroehler Mfg. Co., may well be termed a self-contained unit in that it is independent of outside service for water as well as electric power. An adequate supply of water is always available from a well operated in connection with the plant. This water is passed through a special softener which removes the scale forming element that usually gives so much trouble in the boilers.

In addition to the generating equipment, num-

erous pumps and compressors are to be found in the power plant. One of the latter compresses the air for the spray equipment, cleaning nozzles used in the plant and for the air clamps used in the assembly-ing department. Another compressor takes care of the hydraulic veneer press and of the hydraulic lift-ing equipment which is used in several departments. Storage tanks for both these compressors are located in the power-house.

Modern equipment in itself does not necessarily make an up-to-date plant. It must be operated in-telligently and the work must be so planned and or-ganized that full advantage is taken of the equipment provided and so that everything goes along without hitch or delay. The way the plant of the Krochler Manufacturing Company is organized, equipped and operated speaks well for the vision and progressive-ness of those responsible.

Lock Nut for Tea Wagon Wheels

By W. A. M.

The writer has in his home a tea wagon made by a Canadian furniture manufacturer which gave us considerable trouble from the wheels falling off when it was in use. These wheels are held in place by a round faced nickle plated nut on which it is impos-sible to get a grip with a wrench, or with the fingers, to tighten it. And as soon as the wagon is pushed across the floor off comes the nut. Fortunately the nut droping on the floor gives ample warning to prevent a real disaster, as would have happened had a load of dishes crashed on the floor.

Counterboring hub of wheel and using second nut will pre-vent nut A from working loose

I found a very simple way of overcoming the difficulty, one that would cost practically nothing in a factory. I counterbored the wheel, making the hole smaller, of course, than the diameter of the nickle plated nut. Under this nut I put an ordinary square nut. The counterbored hole being just the depth of this nut brought the nut flush with the face of the wheel. Then the nickle plated nut goes on and just acts as a lock nut. The wheels have never came off since.

In boring out for the nut don't do as I did at first, cut a square hole the shape of the nut. The square mortised hole performs the same function as a wrench, and turns both nuts right off the thread in no time. In boring the wheels the large hole could be bored first the depth of the nut, and then the smaller hole bored for the axle. It may mean another opera-tion, but it is a small one and will pay. In passing through a furniture store one day I heard a lady say-ing to another one, "Don't buy one of those things. We have one and we can't keep the wheels on it." I knew then that I wasn't the only one that had ex-perienced trouble.

Furniture Manufacturers Get Together

The Furniture Manufacturers Association recent-ly held district meetings at Toronto, Kitchener, and Owen Sound. This departure from the regular prac-tice of holding a general meeting at the association headquarters in Toronto, was made to enable each member organization to be represented by a number of executives, the idea being that in the case of a gen-eral meeting in Toronto only one, or at the most two, members from each firm would attend, whereas by holding district meetings at various centres it made it possible for each manufacturer to be represented by several of their organization.

The purpose of these gatherings was to analyse conditions in the furniture manufacturing field in order to definitely ascertain just what the existing situation is. The result was more or less of a sur-prise. Furniture manufacturers have been faced with an unusually prolonged Summer lull and there are those who believed that business was practically at a stand-still. However, figures presented by the differ-ent manufacturers indicated that the total loss volume of sales for the first seven months of this year was in excess of the sales for the corresponding period of last year, and further that on the average furniture manufacturers are not carrying an excessive stock of finished goods. It was also pointed out that there has been a slight increase in the number of orders being received, which, it is hoped, is the beginning of a successful fall business. As near as could be de-termined the retail trade has been very good, which would seem to indicate that when the improved fall conditions make themselves felt, the retailers will be forced to buy in fairly large quantities to replenish and maintain their stocks.

The meeting held at Owe Sound was unusually successful, not only from the view point of attend-ance and the interest shown, but also because of the manner in which the visiting manufacturers were en-tertained. Upon their arrival at Owen Sound they were taken for a cruise around the Bay on the steam yacht Vendetta. After several hours on the water they were driven to the Golf Club in automobiles loaned by the members of the Owen Sound Board of Trade. There the business meeting was held, after which dinner was served. At the close of the repast the chairman of the association thanked the local manufacturers and the Board of Trade for their hospi-tality. This was ably replied to by Mayor Harris, and John Simpson, president of the Board of Trade.

It was largely owing to the efforts of J. A. Mitch-ener, president of the Furniture Manufacturers As-sociation, that this meeting was held at Owen Sound, and it was also due to the same gentleman that the visiting manufacturers were given such an enjoyable time.

A Vital Spot in Your Factory

Handling Lumber in Breaking Out Department Presents Opportunity to Reduce Costs—How Certain Manufacturers Have Improved Their Lumber Handling Methods—Chance to Effect Economies Exists in Most Plants

By J. J. Wallace

In each plant there exist a number of vital or pivotal points the importance of which are not always realized. Such a point is sometimes referred to as the neck of the bottle for it constitutes a point or operation through which the most of the material must pass. That being the case it goes without saying that such points should be given every attention, not only to see that the onward flow of material is not retarded or interrupted, but because owing to the volume of stock passing such places or machines anything that can be done to reduce the handling costs and speed up the output is bound to have far-reaching effects. Such a pivotal point is the breaking out department in the average woodworking plant, for practically all the lumber used must pass through this department.

Elsewhere in this issue, is a description of an electrically driven woodworking plant, mention is made of a lumber lift. This is a type of equipment not often found in Canadian plants, though it is quite common in American woodworking factories. Through it the handling costs in the breaking out department may be reduced materially, the output speeded up and the percentage of waste reduced, to the increased productiveness of the balance of the plant.

Considerable Handling Usually Involved

Ordinarily in many plants the cars of kiln dried lumber must be unloaded, sometimes onto factory trucks, usually necessitating a man on the top of the car. This man either passes the stock to the machine operator or another man on the floor or else throws the boards to the ground, a method that usually results in a certain amount of damaged and broken lumber. Almost regardless of how this unloading operation is performed or how the lumber is brought up to the machine operator, that is, whether on factory trucks, handed down from car to the operator, placed in a dead pile, or thrown on the floor, a considerable proportion of the stock is not convenient and cannot be handled without additional time and effort on the part of the operator. This tends to tire the man and reduce his output as well as retard the production of that particular machine or department.

Car of lumber on lumber lift behind Yates double surfacer in plant of Kroehler Mfg. Co. Limited, Stratford, Ont.

Figures Secured in Different Plants

Machine Served	Production Increase	Labor Saved
Double Surfacers	40% to 75%	1 to 2 Men
Rip Saws	30% to 60%	1 to 2 Men
Cut-off Saws	20% to 50%	1 to 2 Men
Matchers	20% to 40%	1 Man
Edgers	20% to 40%	1 Man
Stacking Kiln Trucks	50% to 100%	
Loading Box Cars	25% to 50%	

It is a foregone conclusion that the machine operator must handle the lumber once at least. By placing the stock convenient to him and at a proper height we lighten the labor involved and enable him to do more work, or produce more, with less effort. If in addition the kiln cars can be so placed and lowered so that the top of the car is at a convenient height for the operator, all he has to do is to move the stock from the car to machine, requiring a minimum of effort and doing away with the labor and additional help involved in unloading the kiln car under the old method. This is exactly what is being accomplished in many plants with the labor-saving lumber lift. With this equipment this car is placed handy to the machine and the top pier is kept at a height convenient for the operator.

What Other Manufacturers Have Done

The savings which have been effected from such institutions are decidedly interesting, as will be seen from the accompanying figures. The increase in production as shown varies from twenty to one hundred percent while the labor of from one to two men is saved. This means lower costs and as such tends to have a decidedly favorable effect on the profit account.

A number of American manufacturers were asked to outline their experience with lumber lift equipment and the replies received, as reproduced herewith, are decidedly interesting.

New Albany Veneering Co., New Albany, Ind.—

Eight Leitelt lumber lifts serving swing saws in Cincinnati plant of Globe-Wernicke Co.

"There is no doubt but that our lumber lift has reduced our lumber handling costs quite materially but we are unable to give you exact cost figures at this time. We use this lift in our lumber shed directly before our lumber planer. It has made the work much easier for the operator of this machine and has increased the capacity to such an extent that the machine is operated only part of the time and the operator is used for other work."

Baker Lumber Co., Washington, Ohio,—"We use this particular lift to raise kiln cars loaded with lumber to the second floor of our plant where the lumber lift keeps the top of the load constantly on a level with the working table of our gang rip saw. We find we can handle our lumber more economically, increase our production, doing the same with less labor and more satisfaction.

Labor Cost Reduced 20 to 25%

Globe-Wernicke Co., Cincinnati, Ohio,—"We are pleased to advise that these lumber lifts have accomplished what we desire. They have reduced labor costs approximately 20 to 25%. They have made the handling of kiln cars easier, quicker, with less loss of time and consequently with less fatigue for the workmen. There has also been loss through damage to lumber in being thrown off the pile. They have made possible greater production at the machines, planers, saws, edgers, matchers, etc.

Grand Rapids Refrigerator Co., Grand Rapids, Mich.—"Two years ago we were operating two old style double surfacers with a crew of three men each, supplying three swing cut-off saws in our cutting room. We were planing at that time seven bunks of lumber containing approximately 3200 feet to the bunk.

"In the fall of 1921 we rebuilt our cutting room, installed a high speed planer with a lumber lift. Four men are operating the planer supplying six swing saws, with a capacity of twelve bunks a day. We are able to realize the full capacity of this planer on account of the efficiency of this lumber lift."

One Man's Time Eliminated

Oregon Casket Co., Portland, Ore.—"We use a lumber lift in front of our planer to lower the kiln car so that the lumber is level with the planer which reduces the cost of handling the lumber by one man per day. Our men like it very much and there have been several operators in this locality who have come to see it, stating that they were going to add it to their plant."

Phoenix Furniture Co., Warren, Pa.—"We bring the lumber from the kiln direct to the cut-off saw and find that with this lift we can do away with one workman for a part of the time at least on every car which is brought into the mill and also handle with less and easier work for the men."

Anything that can be done to bring down costs is usually worth every consideration. Profits are none too large in many plants so that a saving of a dollar or so a day here and another two or three somewhere else is bound to make a gratifying showing. In many instances at a small expenditure for new equipment or appliances or through slight changes in layout, methods or plant organization lasting economies can be effected. If the foregoing article suggests how you can reduce your lumber handling costs and you would like to learn more about the application of this equipment to your plant, the "Canadian Woodworker" will be glad to assist you with further information. If interested just drop a line to the Editor.

One Important Phase of Kiln Drying

Speed Should be Sacrificed to Secure Evenly Dried Material — Uneven Drying Tends to Maintain Repair and Replacement Costs at High Level—Suggestions Indicating how Uniformly Dried Stock may be Ensured

By J. R. Kane

The uniformity with which the stock is dried is an extremely important consideration in the operation of the dry kiln. It is doubtful if plant owners in general realize just what evenly dried stock means and what they are losing annually because this phase of the drying operation is so often neglected.

Not long ago I happened to be in a plant that was manufacturing flooring. In watching the strips come through the sticker I noticed that a wet streak was visible in the centre of a number of pieces. This did not extend the full length of the strip but was confined to the middle section. Of course, the trouble was that while the material on the outside of the cars might have been dry the stock in the centre of the car had not given up its moisture to the same extent. If many strips containing such a high percentage of moisture were to find their way into a floor trouble from unsightly cracks and perhaps cupping would be bound to occur. Even though the manufacturer of this flooring might not be called upon to replace this material such occurrences would not tend to enhance his reputation or improve the demand for his stock.

Helps to Maintain Repair Bill

In the furniture and allied fields the troubles resulting from stock that has not been dried evenly are of a more serious and costly nature. This is so, because such material in a finished article may necessitate costly repairs or result in the rejection of certain parts before assembly but not until after a considerable amount of labor had been expended upon them. In some instances the troubles and faults which may be laid at the door of uneven drying do not show up until after the completed articles are in the finishing room, a feature that adds still more to the cost of making the necessary repairs or replacements.

Another point that enters here is the extent to which this fault may give trouble, particularly in factories where comparatively small cuttings are the rule. A few boards from the centre of a car may be cut into several dozen pieces and enter into as many separate articles. Each of these pieces may contain sufficient moisture to cause trouble and thus the required repairs would extend to a large number of finish articles, even though there were only a few boards in the car that were not as dry as they should be.

When reference is made to uneven drying the longitudinal rather than cross section distribution of the moisture is usually being considered. This is not because it is not desirable that the wood moisture should be distributed evenly throughout the cross section, for a certain amount of cupping and warping would be eliminated were the drying operation to be so conducted that the moisture content in the centre of the cross section samples was in balance with that of the outer sections. Longitudinally there is often a wide variation in moisture content, particularly in boards from the centre of the car. This is because the ends of the boards and the stock in the outer sections of the car are exposed to the moving currents of warm air and as a result are comparatively dry, but if the circulation of the air through the centre portion of the car is sluggish, drying in the centre of the car would be retarded and the result would be a considerable portion of stock with extremely dry ends but with a high percentage of moisture content toward the longitudinal centre of each piece. This longitudinal variation in moisture content is the cause of more trouble than the average manufacturer realizes.

As has been suggested this variation in moisture content is due to slow drying in the centre portions through the car of lumber. Smoke tests have indicated that in many kilns the movement of air through the cars of stock is very slight. As air is depended upon to carry the heat to all portions of each car and to remove the moisture that has been evaporated by that heat, it necessarily follows that where the circulation is slow the rate of drying is slow, to a certain extent being in direct proportion to the rate of circulation. Anything that tends to improve the air movement through all parts of each and every car will tend to give better results as far as drying is concerned. With an adequate flow of warm dry air through the cars the rate of drying should be about the same in all the cars and in all sections of the kiln. This is the ideal toward which all should aim.

While the design of the kiln has much to do with the adequacy and the uniformity of the air movement, the way in which the lumber is piled is a contributing factor. A closely piled car tends to retard the circulation, while the same car piled more openly might have a fine circulation. This point can perhaps best be illustrated by a circulation test made in a kiln having forced circulation. In a section of one of the cars the direction of the air movement was directly opposite to the general movement of forced air in the kiln. An examination disclosed that this was caused by careless piling, a few boards having been allowed to project edgeways beyond the line of the pile. The rapidly moving column of air formed an eddy when it came in contact with these boards. The result was that a vacuum was created which pulled the air through that section of the car, creating a return circulation for a space of about six rows of stock. Naturally the stock in these rows did not dry as quickly as the rest of the pile, for the air that was being pulled back had alreary done its work and was thus not able to pick up very much moisture. This only goes to show how even apparently unimportant trifles effect the working of a kiln and how necessary it is to watch every detail of the work connected with the drying of lumber.

The logical way to ensure even drying is to improve the circulation so that there is a positive, ade-

quate air movement through each car of lumber. It is out of the question to lay down hard and fast rules for doing this as the method to be employed will depend largely on the kiln itself and on the conditions that prevail in it. However, satisfactory drying can be secured by testing pieces taken from the centre of representative care and allowing the drying to continue until the desired point has been reached in these sections. This may mean prolonging the drying operations for a few days, in any event, for longer than would be necessary were the circulation to be improved, but the results will be well worth the additional time involved. With even drying secured, the repair bill due to improperly dried lumber should show a satisfactory decline.

The dry kiln is a piece of equipment the same as any other machine in the plant and must be operated with a fair degree of intelligence for the best results; in fact successful drying may be expressed as three-quarters operation and one quarter equipment. While some may consider this an exaggeration even the best equipment in the hands of an ignorant, careless operator cannot be expressed to produce good results. After all the kiln is only a piece of inanimate equipment, while the drying of lumber presents many variations and complications so that it must necessarily be directed in an intelligent manner with a full knowledge of what is at all times going on in the kiln.

Work is the panacea for every heartache, every ill, every discouragement. Through it comes success.

Reducing Labor by the Shaper

Often the output of the shaper is limited by the amount of labor required to push the work past the cutter head. Anything that will tend to reduce this work will enable the operator to produce more with less effort. For that reason the feed device shown on the shaper in the accompanying illustration is of unusual interest.

The picture was taken in the electrically equipped chair factory of Alfred H. Whitney Co., S. Ashburnham, Mass., and shows a Whitney motor-driven shaper with a simple power feed attachment which carries the work past the revolving cutters. This feed device is driven by a small motor at the base of the machine. A gear driven sprocket mounted on the bracket surrounds the revolving spindle. The teeth of the sprocket engage a perforated steel tape which is attached to the bottom edge of the pattern or form. As the teeth of this sprocket mesh into the perforated steel tape, the form to which the work is attached is fed past the cutter head. Speeds of 29, 19, and 11 feet per minute can be used. All that is required to change the feed is to shift the belt on the cone pulley.

In this plant it has been found that this attachment more than doubles the output of the shaper. The illustration shows three seats being shaped at one operation. Under the older method of feeding by hand, only one seat could be handled at a time. While this does not mean that the output was trebled, yet it does represent a worthwhile increase.

Motor driven shaper feed attachment by which the work is carried past the cutters as varying speed tends to increase output several times.

The Show Window of Canada

Products of Canadian Manufacturers Attractively Displayed at C.N.E. —Description of Exhibits of Particular Interest to Woodworkers —Overseas and U.S. Concerns Well Represented

"The show window of Canada" is a term often used to describe the Canadian National Exhibition which is held each year at Toronto. It is very apt in its application, for the various features of this annual exposition mirror or reflect the development and expansion of Canadian National and Industrial life and display in an attractive manner the products of our fields, forests, mines and factories.

To attempt a description of this vast enterprise would require a special edition of the Canadian Woodworker. Pages might be devoted to such exhibits as that made by the Canadian General Electric Co., who had on display and in operation the intricate, automatic equipment used in the manufacture of electric lighting bulbs or that of the Belding Corticelli, Limited, who had a ribbon making loom in operation, producing attractive ribbons in various multi-colored patterns. However as space is limited it has been necessary to confine ourselves to those displays that are of interest and value to the practical readers of this publication.

P. B. Yates Machine Co., Ltd. Hamilton. Ont

As usual the Yates display was the first to attract attention upon entering Machinery Hall from the East. This year they were showing a Yates G2 chain feed rip saw, equipped with S. K. F. ball bearings, a Yates Nailing machine, a Yates B2 double surfacer with round heads and grinding and jointing attachments; a Yates F25 variety saw equipped with S. K. F. ball bearings, saw guard and shavings exhaust attachment and a Smith & Phillips window frame machine as manufactured by the Lamson Cutter Head Co. of Chicago. The P. B. Yates Machine Company are the Canadian representatives for this machine. The F25 variety saw is a new addition to the Yates line and is of the same sturdy construction that characterizes all Yates equipment.

J. D. Wallace & Co., Chicago, Ill.

This display of Wallace portable woodworking machines as found at the C. N. E. this year represents the first showing of these machines to be made in Canada. Included in the display was a Wallace 4 in. jointer, Wallace 6 in. jointer, Wallace universal saw bench, Wallace plain saw bench and a Wallace 16 in. band saw. All these machines are portable and are driven from an ordinary lamp socket, so that they may be operated wherever electric light is available. Another interesting feature of this exhibit was a number of Sepco Automatic glue heaters. With these glue pots the temperature of the glue is automatically controlled as desired, effecting worthwhile glue economies.

General Machinery Co.

This company who are selling agents for the Elliot Machinery Co., Belleville, Ont., were showing a complete line of Elliot equipment. The centre of attraction was the new model No. 8 Elliot combination woodworker which was being demonstrated on various classes of work. One of the new features on this machine is an underslung rip-saw attachment operated in connection with the 6 in. jointer which forms part of this machine. A number of other Elliot machines which may be driven from the motor on the combination woodworker were also shown. These include a drum sander, 28 in. band saw, 16 in. x 6 in. pony planer with belted feed drive and a combination jig-saw and shaper. Another machine shown was the No. 7, Elliot woodworker, which consists of a variety saw and 6 in. jointer. The outer end of the saw spindle is machined to take drills and chucks and may be used for boring of various kinds.

Cowan & Co., of Galt, Limited, Galt, Ont.

The Cowan line was represented by a number of these well known machines. These included a Cowan scroll saw 317 Cowan combination woodworker, Cowan ball bearing power feed rip-saw, Cowan chain mortiser, Cowan hollow chisel mortiser with power feed and a 42 in. Cowan ball-bearing re-saw. A number of these machines were belted up and attracted considerable attention when set in motion. As usual this display received a lot of favorable comment. Numerous woodworkers took occasion to visit the booth and inspect the equipment shown.

P. L. Robertson Co., Milton, Ont.

The recessed head screws exhibited by this company attracted considerable attention. A number of pieces of wood were provided and those interested were given an opportunity to try their hand at driving these screws. In addition to recessed head screws, rivets and nails of various kinds were on display. This screw is superior in many respects to the ordinary slotted screw and is gradually winning general approval.

A. R. Williams Machinery Co., Ltd. Toronto Ont.

The "Williams" exhibit included both metal and woodworking tools. The former consisted of lathes, millers, grinders and similar tools while woodworking machines were shown in the shape of a Crescent combination woodworker, including saw, shaper, band saw and jointer; Williams jointer; Universal floor sanding ma-

chine and several portable machines as follows: Union portable band saw; Union portable shaper and a Union portable combination saw table and jointer. In addition hangers, pulleys, belting and tools and supplies of various kinds were presented. Owing to its variety the "Williams" display always has rather a universal appeal and as always it attracted a lot of attention.

Dodge Manufacturing Co. Limited, Toronto, Ont.

"Power transmission equipment of all kinds" best describes the display to this company. The showing included hangers, couplings, clutches, boxes, pulleys, counter shafts, etc., in fact practically everything connected with power transmission was on display in some form or other. An addition to their regular display was made in the shape of an assortment of Chapman double ball-bearings as manufactured by the Corman Engineering Company, Toronto. This line is being handled by the Dodge people and supplements their already complete line of transmission equipment.

Lancashire Dynamo & Motor Co. of Canada Ltd.

Probably the most interesting feature of this display was their ventilated type motor, one of which was running in the centre of their booth. Colored streamers attached to the outlet end of this motor indicated the volume of cool air that was passing through it. The Lancashire ventilated pipes may be attached to it ensuring that none but clean air is passing through it, even when operating where dust and shavings are plentiful. For this reason it is well adopted to woodworking plants. A number of other motors, an arc welder, starting devices and a "Crypto" battery charging unit, comprised the balance of the display.

D. K. McLaren, Limited, Montreal

As might be expected leather belting in various widths, plys and grades comprised the main feature of this display. Rawhide lacing was not overlooked, neither were belt fasteners of various types. Other lines included mill supplies of different kinds, particularly those required by cotton mills.

Clipper Belt Lacer Co., Grand Rapids, Mich.

The showing of Clipper belt lacers and belt trimmers made by this company seemed to catch the fancy of many of the passing throng for there were always some interested spectators. This line includes Clipper belt lacers; Clipper belt trimmers, for quickly squaring the ends of belts and Clipper belt hooks, also rawhide and fibre pins for the belt joint. This is a form of lacing that is popular in both wood and metal working plants.

Opportunities for Export

The following enquiries from overseas buyers who are interested in securing information relative to Canadian wood products, were received recently. The names of the companies desiring quotations on these various lines may be secured by writing the "Canadian Woodworker" referring to the inquiry number in each instance.

Boxboards, Wood Wool (Excelsior) and Building Materials.—A firm in Cork city, engaged in general export and import business either as agents or buyers as may be arranged, with a strong desire to build up trade in Southern Ireland for Canadian firms, will be glad to hear from shippers of these commodities. This firm has a strong directorate of well-known Cork business men and is managed by a gentleman having ten years' experience in Canada. No. 2201

Handles, Dowels, etc.—A Dublin firm, with a London office and representatives in Hamburg, Paris, Brussels, and New York, will be glad to get in touch with a Canadian firm who export wooden handles, dowels, clothespins, washboards, etc. No. 2202.

Musical Instruments.—A Dublin firm, with a London office and representatives in Hamburg, Paris, Brussels, and New York, will be glad to get in touch with Canadian firms desiring to export organs, pianos, gramophones, etc. No. 2211.

Birch Box Boards.—A Swansea firm desires to get in touch with Canadian exporters of birch box boards, and parts generally. Quotations c.i.f. Swansea desired. No. 2123.

Hay Fork Handles.—Quotations (in sterling) on straight hay fork handles in carload lots, from 4 feet to 8 feet, 6-inch increases in size, diameter 1⅜ inch, in Northern ash only, are asked for by a Bristol merchant house. No. 2123.

Bent Fork Handles.—A Bristol firm desire quotations, in sterling, free delivered Bristol, on bent manure fork handles, sizes 4 feet and 4 feet 6 inches, diameter 1 7/16 inch. Northern ash desired. No. 2124.

Perforated Chair Seats.—A London company wish to purchase monthly quantities of 200 to 300 gross, perforated and varnished birch chair seats, circular, square and shaped, the chief dimensions being 12, 13 and 14 inches, c.i.f. London. Illustrations on file. No. 2255.

Turned Beadings.—A Liverpool importer asks for quotations on quantities up to 10,000 feet of turned oak or birch beadings, in lots of 1,000 feet of each pattern. No. 2270.

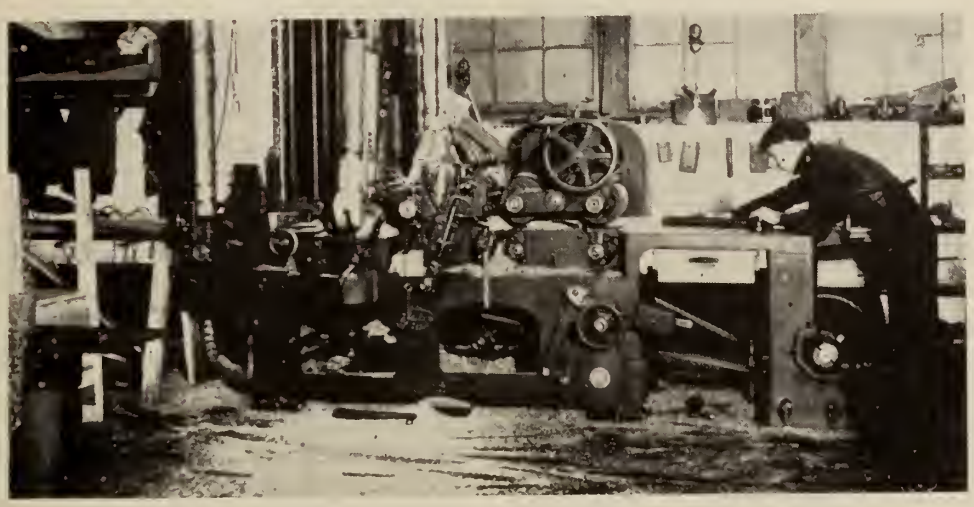
Jacobean Turned Mouldings.—A Liverpool importer asks for quotations on the above in oak or birch, in 20,000 feet lots. No. 2271.

White Birch Dowels.—A Liverpool firm ask for quotations on the following, all sizes from 3/16-in. to 1-in., and in lengths from 24 inches up. Must be true to size, or seasoned white birch, and free from knots. No. 2271.

Tea and Rubber Chests.—British plantation estate agents in Batavia interested if Canada can compete and make to exact size. No. 2278.

The wheels of a band resaw should be ground occasionally if you do not want to be troubled with broken saws and imperfect sawing.

What's Wrong in This Picture?



Accompanying article describes how output of operation depicted above could be made to conform to capacity of machine

Hopper Feed Attachment for Short Stock

Operation Shown Above Constructively Criticized—Capacity of Machine Should Control Output—Handling of Short Stock Important Consideration

A number of replies have been received to the query "What's wrong with this picture?" which was asked in the August Canadian Woodworker in connection with a photograph showing a sticker installation in the plant of one of our readers. This view is reproduced herewith for the benefit of any readers who happened to miss it last month. It was hoped that the response would have been more general, had perhaps there would have been more replies had not some of our readers suspected a catch somewhere.

Of those received, one suggested that apparently the truck of rough material was behind the operator necessitating a half turn every time he picked up a piece. Another pointed to the wrenches which were on the floor and suggested that provision should be made for keeping these tools off the floor. That the sticker should have been placed the other way so that the light from the windows would fall on the operating side of the machine, was the suggestion of a third reader. The maker of the machine happened to recognize his equipment and pointed out that the short stock guide was missing from the in-feed end.

All these suggestions are good and to the point. While it is likely that the truck of material was moved back so that it would not obscure the machine while the photograph was being taken, yet the placing of such material in relation to the operator and to the in-feed end of any machine is extremely important. A detail of this nature may appear trivial, with the result that the placing of material is not given much attention in many plants, yet this is an important element in any operation and has a marked effect on production.

The same may be said of keeping the wrenches and other tools off the floor and having a definite place for them. Another trifling detail perhaps, yet it is a safe bet that considerable valuable time is wasted in a good many plants in looking for wrenches that have been buried by shavings or misplaced. Certainly it is not an uncommon sight to see a stickerman searching around in the shavings for a wrench that should never have been placed on the floor. Further, carelessness with regard to such points as this, lead to slovenliness and slipshod methods as applied to other operations.

Light is an extremely important consideration in the setting of any machine. If the operator is forced to work in a poorly lighted section of a factory or in the shadow of his own or other machines, how can he be expected to work to as good advantage as were his machine or bench so situated that plenty of light were available when needed. It would not be a bad idea to study each machine in a plant with an idea to seeing if the lighting could not be improved.

The point that this query was intended to bring out had to do with the feeding of the material itself. As stated, this machine was operating on rim moulds for phonograph tops, the stock being cut to lengths. These pieces were in the neighborhood of twenty-four inches in length. The question is could an operator keep this machine filled with material if the feed were as fast as it could be, considering the quality of work desired?

In feeding short stock through any constant feed machine, below a certain length the output of the machine is limited by the ability of the operator to pick up the short pieces and place them in the machine. In other words there is a definite point or length, which varies with each feed speed and also with the cross section area of the stock being handled, below which the ability of the operator to keep the machine full is the controlling factor. Above that length the feed of the machine governs the output for the operator is able to keep the machine filled with-

out having to exert himself unduly. This length increases as the feed increases.

Figures indicating just when this point is reached are not available and in any event they would only be average at best for with a quick active man at the machine the short material would be handled to better advantage than were a slower moving operator in charge. However this information is not important, for it is easy to see when the operator is not able to keep up with the feed. When this is the case it would seem to be far better to cut down the feed to a speed at which the machine could be kept full and thus take advantage of the smoother finish which would result

Hopper feed attached to Yates moulder in plant of Kroehler Mfg. Co., Ltd.

from the slower feed. If this is not done the quality of the work may be sacrificed to some extent without any gain in output.

To refer to the picture again, while the feed carried was not given, yet the position of the operator suggests that he was experiencing trouble in keeping pace with the machine or in other words the machine was not being operated to capacity. The point to be emphasized is that where short stock is being handled a hopper feed attachment should be provided, so that the machine can be kept full at the highest feed speed the quality of work desired permits. This is borne out by the experience of many woodworkers though the value of this attachment is not as widely recognized as it should be. With a hopper feed, the capacity of the machine and the quality of work are the controlling factors, not the ability of the operator to keep up with the feed. This is only as it should be, for it is a good policy to take full advantage of the capacity of all machines in operation and thus secure maximum output and what is even more desirable, low costs. What is the use of having equipment that is capable of doing work at fast feeds if the machines are continually worked for below capacity.

Should Building Operations be Postponed?

In view of reiterated statements of an influential economic service organization, that there is an "excessive" or "comfortable" overproduction of lumber as well as of most other building materials, and advising a postponement of building commitments, the National Lumber Manufacturers Association calls attention to the actual statistical position of lumber as revealed by its "barometer" and the Graphic Lumber Summary just issued by its Bureau of Lumber Economics.

According to the barometer, figures for 428 of the larger commercial sawmills of the country, representing about 40 per cent of the entire lumber production of the country and the bulk of the nation's general market lumber, unsold lumber stocks on June 1 were 2,030,000,000 as compared with 2,114,000,000 feet on January 1.

This indicated stock on hand represents scarcely more than six weeks' production of the mills at normal capacity, and is accompanied by reports from virtually all of the lumber manufacturing districts of short and broken stocks. The figures as to stocks on hand are admittedly only approximate, but the general relation between January 1 and July 1 is supported by the fact that actual production between those dates, of virtually the same mills was 346,000,000 feet less than shipments. In view of these figures and not overlooking the present curtailment as compared with the exceptional activity of the first part of the year, the recent surplus of production over shipments, and some reduction in the volume of unfilled orders, the National Lumber Manufacturers Association questions the soundness of the judgment involved in advice that building operations be postponed for several months. A general halting of business activity of all kinds—marked depression—would doubtless result in lower building costs, but the present condition of lumber stocks and rate of production do not support the view that contemplated building operations should be postponed on account of the volume of lumber supply.

Wood Products Well Represented

Each year witnesses an increasing number of woodworkers taking advantage of the opportunity afforded by the Canadian National Exhibition to arouse a greater interest in their lines and to increase the demand for articles of wood. The list of items made of wood on display this year included furniture, pianos, phonographs, kitchen cabinets, refrigerators, mill work, doors, hardwood flooring, ladders, and other similar articles.

In this connection the manufacturers of hardwood flooring seem to have decided that this annual exposition presents an opportunity to not only create added interest in hardwood flooring, but to popularize individual brands of flooring as produced by different manufacturers. Thus the Seaman-Kent Company, Limited, Toronto, were showing Beaver Brand hardwood flooring in different grades and woods. The Seaman, Eaton Flooring Co., Toronto, had an attractive exhibit of Empire Brand flooring as manufactured by the J. R. Eaton & Sons of Orillia, Ontario, and the Satin Finish Hardwood Flooring Co., Weston, Ont., emphasized the interesting features connected with their line of satin finished flooring. An interesting part of this latter display was the milling head which is responsible for the unusually smooth surface from which this particular brand of hardwood flooring takes its name.

In addition hardwood flooring was not overlooked in the mill work exhibit made by the Buyers Door and Manufacturing Co., Toronto, the R. Laidlaw Lumber Co., Limited,, Toronto, and Kent, Ockley Co., Limited, Toronto.

Activity of American Homes Bureau

In discussing the work of this organization and particularly what has been accomplished, the methods employed and the goal in view, F. P. Stockbridge, director of information, says, "We began with the physical aspects of the home, particularly of the interior of the home. We felt that we must begin there and try to instill an appreciation of, and desire for, good taste and beauty in the furnishing and decorating of the home and to point out the possibilities within the reach of anybody's purse of makinig any home, however small and humble, a home of beauty and outward refinement.

"We have made a beginning in this direction through two principal channels of public attention. One of these methods is the holding of "Better Homes" expositions and institutes in various cities; the other is through educational articles in the daily and Sunday newspapers. By the end of our first year of activity we shall have held twenty-six expositions and institutes in as many different cities. In these expositions, which are held only in the large cities, we show a great series of rooms of different sizes and styles, each of these rooms being completely furnished and decorated under the guidance and direction of artists having common sense, so that the whole exhibit makes a great object lesson in the art of furnishing and decorating the home. We show in these expositions not one living room but perhaps twenty living rooms of different sizes and with furnishings and decorations of different designs and qualities, and we surprise visitors by showing them how little money is actually needed to create an atmosphere of beauty and artistic good taste. We show them bedrooms, dining rooms, kitchens, sun parlors and other rooms, all properly and beautifully furnished and decorated. Then we have a staff of artist lecturers who accompany their lecturers with ocular demonstrations of good taste and fitness contrasted with bad taste and ugliness. In some of these lecture-demonstrations, rooms are created on the platform and reasons why furnishings and decorations of particular types harmonize with each other, how they should be arranged, and what colors should be used together to give the best effects are carefully and graphically explained. People go away from these expositions determined to make their own homes better and they often write and thank us for the help we have given them.

"Our 'Better Homes' institutes are held in smaller communities where there is no room for an exposition; they consist of the lectures and demonstrations only, but here, too, large and enthusiastic audiences assemble to hear the message of beauty and good taste in the home.

"And all the time we are spreading out our educational work through the newspapers. We now have nearly 200 daily papers throughout the United States that are publishing every day or every week, for the education of their readers, articles and pictures which we prepare on the entire subject of the building, equipping, furnishing and decorating the home. The newspapers are glad to do this because they have found that their readers are intensely interested. They know this because, in connection with these newspaper articles, we conduct a Question and Answer service; newspaper readers write in to the papers asking for advice about home making and the editors send these letters on to us to be answered. We get hundreds of these letters from all parts of the country, and in every instance we are making 'Better Homes' through this correspondence.

"These efforts are only a beginning, as I have said. We are beginning now to co-operate with some of the great national magazines, helping them to teach their readers how to make their homes better and more attractive. We have under preparation a series of papers and lectures for the use of women's clubs so that before long we shall be able to put into the hands of every women's club in America a complete season's program of study and education on 'Better Homes.' We are working on arrangements for motion picture films which will carry the message of 'Better Homes' to millions of young folks all over the country. We are co-operating with the United States Bureau of Education in a survey of the educational system of the country as it relates to home making, as a basis for a general revision of the high school and college courses in this important phase of preparation for life. We have writers and artists now at work preparing books on different phases of the subject of 'Better Homes.'

"It will take time, and a great deal of time, for us to get into full operation in all directions in which we expect to extend our activities and when our campaign for 'Better Homes' is in full swing, it will take time—a generation or two perhaps—before the full effect of this movement shall be realized.

"We have, however, made a beginning. We have already aroused nation-wide interest in the subject. Since we began this movement a dozen other agencies and organizations working toward the same end by similar or different means have sprung up. The next few years will see, we believe, a marked and powerful swing of public interest and education back to the home."

Mill Work Publicity Campaign Considered

At the annual meeting of the Mill Work Cost Bureau held at Chicago last April, a resolution was passed authorizing that a committee be appointed for the purpose of considering and, if advisable, outlining a publicity campaign to stimulate the use of mill work products. This committee has been appointed and is truly representative of the entire mill work industry. It is likely that this committee will meet early in October, and thoroughly discuss the advisability of an extended publicity campaign. The interim provides an opportunity for the members to give this important subject careful thought, and to prepare for consideration, plans as to the best procedure to be followed.

Winners of Simonds Economic Prize

"The Lack of Economic Intelligence" was the subject of the Alvan T. Simonds economic contest for 1923, which was open to High School and Normal School pupils in Canada and the United States. The first prize of $1,000 was won by John J. Borchardt of Brooklyn, and the second prize of $500 won by Morris Saltsman of Brooklyn, N. Y. The winner of the first prize was 18 years of age, while the successful contender for second prize was 17 years old.

J. R. Shaw to Open Exhibition

J. R. Shaw, Woodstock, Ontario, president and managing director of the Canada Furniture Manufacturers, Limited, and ex-president of the Canadian Manufacturers Association, is to formerly open the Border Cities Furniture Exhibition which is being held at Windsor, Ontario, during the week of September 15th to 21st. In addition Albert F. Healy, M. P. and Frank W. Wilson have also been invited to attend along with other prominent officials and business executives. A special invitation has been issued to all furniture manufacturers.

As outlined in the August Canadian Woodworker this exhibition is being promoted and managed by the retail furniture dealers of Windsor. In this connection a sum of money has been donated by the furniture manufacturers through the Furniture Manufacturers Association, to assist in defraying expenses. Further the booths and partitions, which are portable, have been supplied by the Furniture Manufacturers Association, the intention being to use this equipment in other centres from time to time.

Hardwood Doors in Different Woods

Of interest to home-builders, prospective builders, and home-owners was the display of doors made at the Canadian National Exhibition by the Pannill Door Co., Limited, Toronto. Included in this exhibit were many attractive doors, in such wood as mahogany, walnut, oak, birch, chestnut, red-wood, and pine. Some of these doors were unusually attractive and evoked many impressions of admiration. The value of the door as a part of both the interior and exterior decorative scheme is becoming more and more appreciated with the result that the demand is largely for strongly made, attractively designed doors in various hardwoods. This trend was duly reflected in the doors shown by this progressive concern.

Are Over-Sized Belts and Pulleys Economical

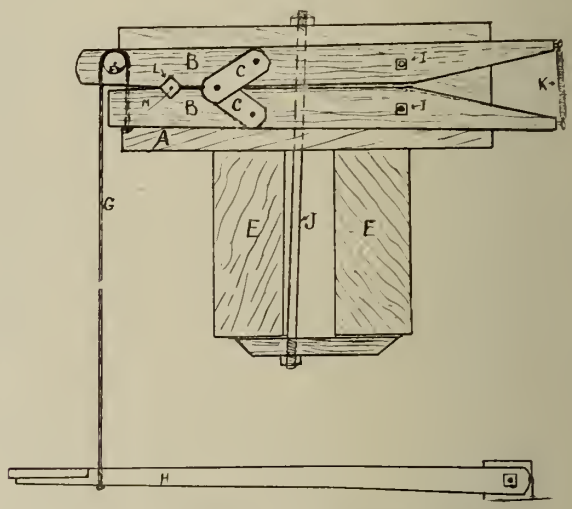
On purchasing a new 75 H. P. motor recently it was stipulated that a motor pulley would be furnished as called for by the purchaser. The usual pulley put on by the makers was 10 in. dia. x 12 in. face. This was considered much too small by the mechanic in charge of the plant. A motor pulley 15 in. dia. x 18 in. face was asked for and supplied—just 50 per cent. over sized—58 ft. of 8 ply 16 in. rubber belting was used as drive belt from motor to main shaft. A drive belt of this length when running slack will snake a little edgeways, hence the extra width of pulley of two inches over the width of belt.

This motor has now been running some months with a decidedly slack belt, and though the motor is constantly being taxed to the limit of its guaranteed over-load, the drive has never given any trouble, rain or shine, but the motors full power, to the last pound, is being delivered to the transmission shaft.

The benefit derived from this over size idea are several and all valuable. Slack belts get better contact on both drive and driven pulley; cause less wear on motor and drive shaft bearings thus avoiding hot boxes and rebabbitting of bearings with customary delays and expense, and perhaps the most important and largest money saver is that the power you should get from the juice you pay for is absolutely delivered to the transmission shafts all day long, no matter what the motors load may be. A narrow belt when strained to its limit, may drive in damp weather but fail on dry and warm days, slipping, and curtailing the day's output. When you next install new or have to reset used or running plants, remember these ideas, they are worth much even if they cost you only the few minutes you spend reading this article.

Centering Device for Wood Turners

The device shown herewith is a great time saver, it is designed for centering square blanks quickly and accurately. While there are several methods used for centering squares, all are usually slow and tedious, especially when hundreds of pieces have to be turned. Stock from ¾" to 4" square or more, can be centered with this device. By pressing the foot treadle H the



Will accurately centre large volume of work

jaws B B close down on the piece to be centered and the jaws grip (at L) two corners of the stock, the stock is then pressed against the centering point M or the stock if very hard may be driven against the centre point with a light blow of a hammer.

"A" is a block of wood 3" x 6" x 2/8" long. This is bolted onto the lathe shears E E just to the left of the lathe head stock. The centering point M is secured through these pieces and is adjustable, located as shown. B B are two pieces of hardwood 1½" x 2½" the lower one is three feet long the upper one 3 inches longer, these are secured to A by through bolts located at I I and should be a snug fit. C C are 2 pieces of plate rivetted together at one end and bolted to B B as shown. These compel B B to be at equal distance above and below L at all positions. F is a pulley or sheive let into upper B. Cord C attached to lower B travels up over this pulley and down to treadle H. K is a spring that keeps the jaws open. J is a through bolt molding A firmly to the lathe shears E E.

Not only will this be found a time saver, but where stock is dressed up (as is usual) to exact size before being turned, true centre is very important as a piece even 1/16" off makes a cull turning, or if used will be an eyesore to every mechanic who uses it. Every woodturner should have this or something similar, as any handy man can make it at small cost. The cut shows the jaws closed together as if pressure was being used on the treadle, when not being used the jaws at L L are wide open.

Overseas Market for Boxes and Shooks

Export Business Acts as Stabilizer—Where Markets Are to be Found—What Other Countries Are Doing in Way of Export Business

To the box manufacturer who is not satisfied to have his business controlled by local conditions and who is desirous of reaching out and taking advantage of outside markets there are many fields that should claim his attention. True there are many difficulties to meet and overcome, perhaps the most important of which is that of reducing his own costs to a point where he can compete with foreign manufacturers on something approaching an equitable basis. This may mean improved methods and new equipment but in itself it is not such a bad thing for while enabling him to take advantage of outside markets it will also place him in a position to compete more successfully for domestic business.

Great Britain presents the largest market for box shooks as it is the principal shook importing country of the world. At the present time this market is supplied largely by Norway and Sweden. According to figures covering the year 1920 Sweden exported shooks to Great Britain to the value of $9,000,000 while Norwegian shipments to the same market totalled over $2,000,000.

Then there is Ireland to consider. There is a good market there for cases in which to ship eggs and dairy products. For instance, in 1921, Ireland exported eggs, chiefly to Great Britain, to the value of $48,000,000. The question of providing boxes to handle this large quantity of eggs is one that should be of interest to Canadian box manufacturers. These egg cases must conform to certain standard specification particulars of which can be secured by writing the "Canadian Woodworker."

Many Rubber Cases Required

Another outstanding opportunity for Canadian enterprise is in supplying the demand for packing cases for rubber, from the East Indies. While no separate classification is given in the import returns, it may safely be said that the 1921 total imports of boxes exceeded $2,000,000 in value. The chests in use in the British Malayan industry are identical in size and make with those used in rubber packing in Java, Sumatra, Ceylon and Burma, and are also used for the tea trade in India, Ceylon and Java and the desiccated coconut industry in certain of these territories. The aggregate demand is thus extremely large. Two instances alone are sufficient to indicate its extent: tea passing through Calcutta and Chittagong requires three and a half million cases annually, while the present demand or rubber cases in British Malaya exceeds one and three-quarter million annually. These figures are brought to the attention of Canadian lumber mills, especially those of British Columbia, with a view to emphasizing the remarkable opportunity which exists, and urging that a detailed study of production possibilities may be undertaken.

There are two classes of packing cases used in the rubber industry: the plain, semi-dovetailed half-inch wooden case, and the three-ply veneer case. Both have an outside measurement of 24 inches by 19 inches by 19 inches.

A three-ply packing case made from "Venesta," a British waterproof plywood, is used largely by the British Malayan rubber industry and is possibly the pioneer three-ply case for rubber packing. Since its introduction Japanese manufacturers have taken up the making of three-ply cases and introduced them into the market. The effort has not, however, been very successful, and the Nipponese product does not appear to be looked upon with much favor at present. The cases should be waterproof and rigid, and the process of assembling involve no possibility of protruding nails which may injure the rubber contents. The general advantage of the three-ply case is that it is strong and allows a certain amount of bulge. The three-ply cases will, in fact, hold ten pounds more rubber than the plain wood type. A further advantage is that eleven ordinary three-ply cases may be shipped to the ton but only ten of the plain wood variety.

Recent prices of three-ply cases c.i.f. Singapore were (inclusive of fittings) as follows: "Venesta," $1.02 (Canadian); Japanese, 75 cents (Canadian).

The local cost of assembling the three-ply case is from 6 to 7 cents (Canadian), while the output required to assemble "Venesta" costs £10 15s. c.i.f. Straits ports. These are considerations in computing the laid-down price to the consumer of these cases as against the plain wood type.

Solid Wood Shipping Cases

Plain wood semi- dovetailed cases were first introduced by Japanese manufacturers, who hold the market at the present time. The Japanese product has heretofore been made from momi, a native wood, but latterly it is reported that Siberian white pine is being used. This is a wood of good appearance and texture and well suited for the purpose.

During the past two years British Columbia box manufacturers have been urged by the Singapore office of the Commercial Intelligence Branch of the Department of Trade and Commerce, to make an effort to compete with the Japanese product. A number of sample cases were sent over to various firms. More than one has submitted samples made from spruce and hemlock. On one occasion the quotation submitted came within a few cents of the Japanese price, but rising exchange against Canadian funds prohibited a real commencement being made in securing orders. There were also one or two points in regard to the British Columbia samples which importers commented upon. They stated that the tongue-and-groove method of placing the shooks together was not as good as the Japanese method, which is that three holes are bored in the edge of each piece of side or top and bottom and these are then wedged together by pieces of bamboo which act as a satisfactory dowel. This may be open to argument, but it is well to take note of the criticism. One of the most important points in regard to rubber cases is that the inside surface of the wood should be abso-

lutely smooth. Recently the Japanese price of momi cases was 59 cents c.i.f. Singapore.

Must Put Forth Some Effort

It is hoped that Canadian manufacturers will make further efforts to capture at least a portion of this trade. Spruce would be quite acceptable and hemlock if fairly clear, would also be favorably considered. Care must be taken in packing the shooks so that they are not damaged en route. A freight rate has been secured from one steamship company running between Vancouver and Singapore of $6.50 per 40 cubic feet ton. In recapitulation, let it be said that the great essential in rubber shipment is that the product shall arrive absolute intact. Cases must therefore be strong, waterproof and damage-proof. This entails exactness in semi-dovetailing and measurement and a smooth inside surface. Further particulars of this market may be secured from the Department of Trade and Commerce, Ottawa.

Other large foreign shook markets are Southeastern Asia and the Mediterranean countries, Canary Islands and South Africa, supplied by Norway and Sweden, with Jugo-Slavia also supplying the Mediterranean countries and Portugal the Canary Islands. The Jugo-Slavia shook exporters since the close of the war have built up practically a monopoly of the Italian market.

The countries mentioned require shooks for packing boxes mostly, with the exception of the Mediterranean countries and Canary Islands, where fruit and vegetable crates are of great importance, and South Africa where the same is true to a less extent.

Figures Covering Foreign Exports

The following table will show what other countries are doing in the way of exportation of shooks and crates (the figures are for 1920):

Sweden, $11,000,000 (about $9,000,000 to United Kingdom).

United States, $4,248,761 (mostly to Mexica, Cuba, Peru and Straits Settlements).

Japan $3,200,000 (mostly to Southeastern Asia).

Norway, $2,300,000 (over $2,000,000 to United Kingdom).

Canada $1,068,390 (mostly to Straits Settlements, Australia and United Kingdom).

Jugo-Slavia, figures not available (mostly to Italy).

Portugal, figures not available (mostly to Canary Islands).

The European market is accustomed to getting a better finished article from Scandinavia than most Canadian box exporters have been in a position to furnish. Box making has been developed along scientific lines in Scandinavia, where highly specialized machinery has been constructed which gives shooks a smooth finish and at the same time manufactures them true to specification. The Scandinavian competition is perhaps the keenest competition which Canadian exporters of shooks must face. The obstacles are not insurmountable, however, because with improved methods of manufacturing, it is certain that Canadian shooks can be turned out at a low price in view of the fact that a large percentage of the raw material can be obtained from low grade lumber.

Set-ups on molders, stickers, shapers, and other machines are the things which add cost to the work bill in running small lots, and there is enough demand for small lots running that machines and means that make for quick and easy changes should be selected.

Elevating or Lift Trucks

Many problems are presented in the moving of stock from one operation to another and from department to department. It is doubtful if the average plant manager fully realizes just what his factory trucking overhead amounts to and savings which can usually be effected by making a careful analysis of the trucking operations and making the changes and improvements which will then become apparent.

In many woodworking plants the lift or elevating truck has been the means of effecting economies in trucking costs. This particular equipment may be used in practically every department where stock has to be moved, particularly in connection with operations which necessitate the picking up and laying down of a large number of small pieces. Further the wood platforms used in connection with this type of factory truck are comparatively inexpensive and when not in use may be quickly piled in some convenient place.

One woodworker, visited recently, was using a combination of lift and regular factory trucks. This

Chapman lift truck handling heavy load of ball bearings

worked out very satisfactory as the factory trucks were used in connection with the quick moving stock while the lift truck platforms handled the slower moving material, particularly pieces and parts which were likely to remain on the factory floor for a considerable length of time. This worked out advantageously and assisted in bringing down the trucking costs. Using a lift truck and platforms in this manner eliminated all re-handling and in addition the factory trucks were always available as required.

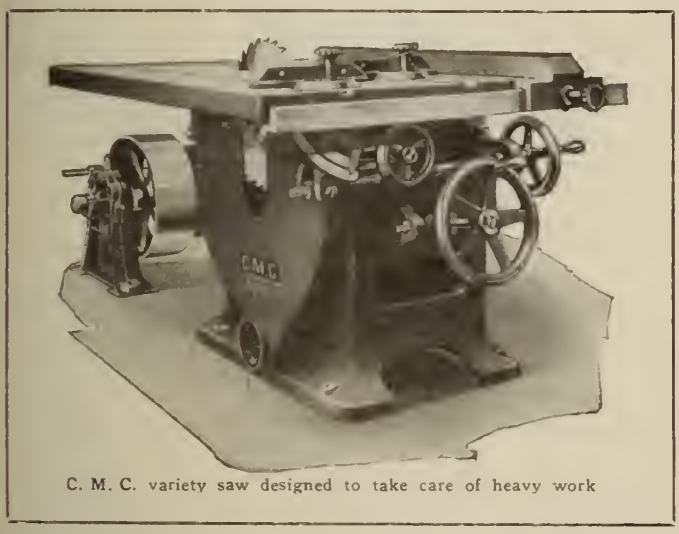
In other plants the factory trucks have been entirely replaced by the elevator or lift truck. Some of the features which are responsible for this tendency are; ease of locomotion and operation, safety to operator and material, ability to be manipulated and operated in crowded and cramped quarters. As will be seen, all these features tend for lower trucking costs.

The accompanying illustration shows a Chapman lift truck handling a heavy load of ball-bearings. This illustration serves to emphasize the manner in which the truck may be handled in a space requiring a short turn. The ease of with which this truck may be operated is due to the ball-bearings with which it is equipped.

Machinery & Equipment

Heavy Variety Saw

A new variety saw designed to provide ample power for heavy work when required, is being placed on the market by the Canada Machinery Corporation, Galt, Ontario. This machine is shown in the accompanying illustration. As will be noted it is of sturdy construction and as the table is 50 in. x 33 in. a wide variety of work may be readily handled. While a 16 in. blade is furnished as standard equipment, saws



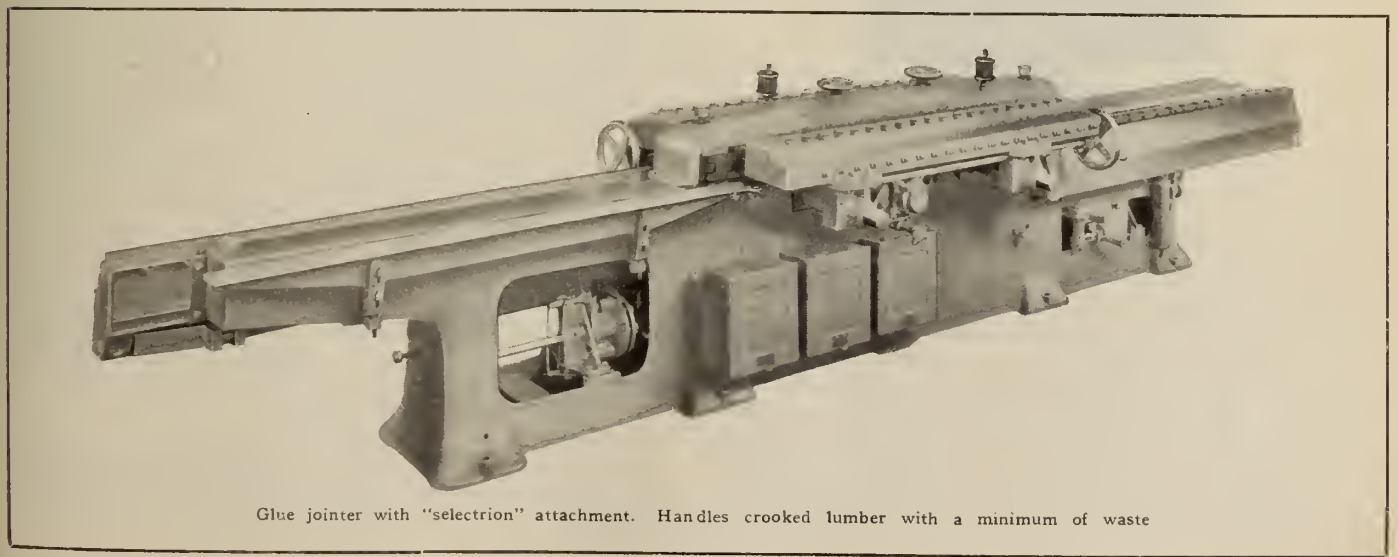
C. M. C. variety saw designed to take care of heavy work

up to 22 in. may be used. A saw of this latter size will project 6½ in. above the table so that stock as thick as 6¼ may be ripped at one operation. The ripping fence is of the double type and may be used on either side of the saw. The cut-off fences are adjustable, a graduated scale being provided to assist in setting these fences to any angle required. The saw arbor which is 1 11/16 in. is specially designed to take care of the largest blade that may be used, while the arbor pulley is of ample size to transmit all the power required. Thus the machine is designed to take care of the heaviest cut it will be called upon to make. The counter- shaft is detached so that this saw is readily convertible from belt to motor drive by installing a motor in place of the countershaft and belting direct to the arbor pulley. The power required varies according to the saw to be used. With saws up to 16 in. from 5 to 7½ h.p. will take care of the work, while from 7½ to 15 h.p. is required for 22 in. saws. The lower saw guard is part of the frame and forms a complete saw dust exhaust hood. Either ball or babbitt may be had as desired. Further particulars may be secured from the makers at Galt.

Straightens and Joints Crooked Lumber.

The "selectrion glue jointer" is a new machine that takes rough lumber just as it comes from the kiln, removes all crooks and curves up to ½-in. in depth, and gives the stock a perfectly jointed edge, all at one and the same time, with one feeding. With this machine the most careless operator cannot take off more than 1/32-in. beyond the deepest point of the curved or irregular edge of a board. This is accomplished by placing the board on a series of sensitive finding fingers which automatically detect the deepest point in the curve. As the operator feeds stock into the machine, each piece instantly takes a position which places the deepest point in the curve in direct line with the jointer heads. Thus each board is individually set for its own curve. Straight-edged boards are handled in the same manner with the same results.

An extra rigid one piece cast frame insures freedom from vibration, and permanent alignment. The feed consists of an endless chain bed driven by a 3-h.p. motor through a four speed change gear box giving 30, 40, 60 and 80-ft. per minute. Feed changes, controlled with levers and completely inclosed, are at operator's position. The chain is made of interchangeable flat links with knurled faces; chain runs over two octagonal wheels at each end of machine and passes over two beds, on each side. Beds are



Glue jointer with "selectrion" attachment. Handles crooked lumber with a minimum of waste

adjustable to allow for alignment with cutterheads as well as gib adjustment for proper chain movement.

A series of rollers, each one of which is dependent of all others, is mounted in a substantial casting and equipped with pressure springs for holding stock in true position while it passes cutters. Each unit is mounted on substantial posts and is adjusted to varying thicknesses of lumber by a handwheel at operator's position.

Cutterhead spindles are complete and self contained in ball bearing motors which are removable as a unit. They are accurately mounted in the frame and easy of access, but do not project from the side of machine. This compact construction reduces the floor space requirement.

Feeding tables are composed of a movable bed equipped with a series of sensitive fingers spaced 4-in. apart. The machine joints any kind of wood from ¼-in. to 4-in. thick, any width from 1-in. upward, and from 4-in. to 6 ft. long on the 6 ft. size; the 8 ft. size takes 8 ft. lumber of the same general dimensions. Longer stock may be run on both sizes if desired. This machine is a product of the Muskegon Machine Company, Muskegon, Michigan.

Portable Electric Router

A light portable router of an unusual type is shown in the accompanying illustration. It is driven by an 1/8 H. P. Westinghouse Universal Motor that operates on a 110 volt circuit, 60, 40, or 25 cycle and either A. C. or D. C. current. Under load the speed is 7,000 R. P. M. The bearings are of the self-aligning ball-bearing type. Provision has been made for

Handy for veining and routing

adequate circulation insuring a cool running motor. This machine will take bits from 1/32 to 1/4 inch in diameter and the cut is adjustable to a depth of 3/8 of an inch. The adjustment for the depth is made by simply turning the motor, as the casing of the motor and inside of the aluminum standard are both threaded. These threads run 16 to the inch so that a half turn raises or lowers the cutter 1/32 of an inch. The weight of this machine is six pounds so that it may be readily moved over any surface. It is adapted for following a design or for working to a form and may be used for form work, veining, scroll, routing, cutting creations for inlay or two tone work or for light veneer routing. Further information with regard to this machine may be secured from the manufacturer, R. L. Carter Company, Syracuse, N. Y.

Williams Buzz Planer

The accompanying illustration shows a new williams buzz planer. This is a strongly built modern machine and is designed to take care of all standard operations as performed in the average woodworking plant. Some of the features to be found in this jointer are, round safely cylinder, equipped with carbon or high speed knives, hollow jointing adjustment, strong

Buzz planer of sturdy construction

tension jointer guard, rabbet groove on front bed, and other points. The frame, which is cast in one piece, is of the three point bearing type. This machine was designed with an eye to the requirements of the average woodworking shop. Further particulars may be secured from the A. R. Williams Machinery Co., Toronto, Ont.

An Interesting Walnut Stump

An interesting insight into modern finishing methods was gained by many of those who viewed the two halves of the walnut stump which were a part of the exhibit made at the Canadian National Exhibition by the McLagan Furniture Co. Limited, Stratford, Ont. One half of this stump was unfinished, and showed the natural grain and coloring of the wood. While attractive yet the full beauty of the grain was not apparent. In contrast to this the beautiful figure and markings of this popular cabinet wood were brought out and emphasized in the other half of the stump by the finish which had been applied. This tended to emphasize that much of the beauty of present day furniture is due to the way full advantage is taken of the natural beauty of the wood by modern finishing methods. This stump, which was about 20" in diameter and was supplied by Kosse, Shoe & Schleyer, lumber manufacturers, Cincinnati, Ohio, was prepared in the finishing department of the McLagan plant.

Invite responsibility and then accept the results. By this plan you will soon discover where you belong.

Upholstering and Trimming

Moth-proof Upholstered Furniture

Manufacturer of Well Known Line Has Developed a Process to Render it Moth Proof—Extensive Sales Campaign Inaugurated

Snyders Limited, Waterloo, Ont., recently inaugurated an extensive sales campaign designed to increase the demand for their upholstered furniture and to make the name Snyders "Sani-Bilt" furniture a household word in Canadian homes. They have gone into this effort in a whole-hearted and comprehensive manner and have developed what gives every indication of being a real merchandising campaign.

Their first move was to develop something unusual to offer to the Canadian furniture buying public. This concern has always built dependable furniture but in that they have not had the field entirely to themselves, other manufacturers of upholstered furniture, not all perhaps, but some at least, are also making quality lines. True, Snyders could have bent every effort to improving the workmanship and design of their furniture, paying stricter attention to all details of construction and scrutinizing closely all the material used and thus produce furniture the dependability and quality of which could not be questioned, but they did not consider that this in itself was enough. After several months of experimental work, during which many tests were made, they finally found a preparation that rendered their upholstered furniture absolutely and permanently moth proof. Combining the features, painstaking care, strong construction, new sanitary fillings, and their special moth proof treatment, they are now directing attention to their "Sani-Bilt, Moth Proof" furniture.

Product to be Advertised Extensively

The campaign started off with full page announcements in leading Ontario and Quebec papers and is to be followed by an extended series of attractive display advertisements. While the initial advertising is being confined to the two provinces mentioned, the campaign is to be national in scope and will shortly be enlarged to embrace all the provinces of Canada.

The newspaper advertising has been prepared with a view to catching the attention and arousing the interest of the furniture buying public, particularly the ladies, and thus create a demand that will be reflected in increased sales on the part of the dealer. With such a demand created the retail furniture men will find it decidedly in their interest to stock Sani-Bilt furniture.

Even though this line were not backed by an extended publicity campaign and other interest creating features, the points previously mentioned together with the liberal guarantee being reproduced herewith, would give the dealers strong talking points that should result in increased sales. It is too early to judge yet, but early indications suggest that the whole idea has caught the interest of the dealers and that they will enter heartily into the spirit of the plan and do all they can to boost it along and cash in to the fullest extent possible.

Every Piece Fully Guaranteed

A perusal of the "Guarantee" suggests that it is designed to inspire and hold confidence. Purchasers of upholstered furniture buy largely on hope or faith. Neither they, nor usually the dealer, has the slightest idea as to the condition of the interior, or the kind and grade of materials to be found under the cover-

H. M. Snyder, Snyder's Limited
Waterloo, Ont.

ing. That being the case the guarantee given will go far to assure the purchaser on this point. The original intention was to include on the back of the guarantee a list of the filling material used in the different suites but this was finally modified. The filling and interior construction was classified under four grades A, B, C and D and this grade classification is shown on the back of the guarantee.

To a large extent the lasting success of this campaign will depend on the way Snyders, Limited, stand behind their guarantee and the liberality with which it is interpreted. The dealer must first be won over on this point and convinced that he will be fully protected without question or quibble should he be called upon to replace any Sani-Bilt furniture under this guarantee. Likewise this will be reflected in the attitude of the dealer toward the customer. If the purchaser of some of this furniture must literally

"scrap" for redress under the guarantee, it is safe to say that his confidence in both furniture and guarantee will be sadly undermined.

Dealer is Not Overlooked

In connection with the newspaper publicity, the dealer is being assisted with window and display cards of various kinds and is also being offered a series of electros to be used in his advertising. Suggestions for advertising copy are also being offered and in other ways it is being made easy and attractive for the dealer to stock and push the sale of this particular line.

The initial advertising campaign is to continue until the first of the year, but it is the intention to follow this through consistently, and persistently and thus gain the interest of both dealer and buying public. This is only as it should be, for, as demonstrated by the experience of the furniture manufacturers in connection with the advertising they did several years ago, little lasting good is accomplished through brief campaigns conducted once or twice a year.

GUARANTEE

"If moths are found destroying this piece of Snyder's 'Sani-bilt' furniture, your dealer is authorized to replace it with other 'Sani-bilt' furniture. We furthermore guarantee that the fillings and other materials used in the construction of this article are new (not renovated), are clean and sanitary; that the construction is sound and the materials strong and durable. If found to be other than as here represented, the merchant is authorized to promptly replace it with other Snyder's Sani-bilt' furniture."

SNYDER'S LIMITED.
WATERLOO, ONTARIO.

The outside representatives were all brought in from their various territories and thoroughly sold on the new campaign. They returned to their respective fields enthusiastically determined to spread the good news, win over the dealers and in other ways take full advantage of the opportunity presented by this new sales policy to bring in an increased volume of business.

This step marks an attempt by Snyders, Limited to place the merchandising of furniture upon a plane more commensurate with the dignity and importance of this great industry. It has been freely admitted that the furniture industry is handicapped and the scope of its activity curtailed because of a lack of modern merchandising methods on the part of both manufacturers and retailers. For this reason it is likely that this present campaign will be watched closely by all makers of furniture and if successful there is no telling just what effect it will have on the sales methods now in vogue.

Attractive Displays of Upholstered Furniture

Upholstered furniture was well represented at the 1923 Canadian National Exhibition held recently in Toronto, some of the displays being quite extensive. Mohair seemed to hold the centre of the stage, although many other types of covering were being shown. Two tone effects are apparently still popular, as two tone pieces were to be found in practically every booth. Some furniture upholstered in effective shades of Taupe came in for quite a lot of favorable comment. A brief description of some of the displays follows:

Kroehler Manufacturing Co., Limited, Stratford

As might be expected the extensive and attractive display made by this Company featured chiefly their line of Daven-O chesterfields and settees. Capable demonstrators were showing these pieces to advantage in both booths, this company having a large exhibit in the "Made in Stratford" display and also another exhibit in the Industrial Building. A very attractive suite in silk demask, which was one of their new creations, caught the fancy of many who viewed it. The wood frame was apparent in most of their pieces.

Farquharson-Gifford Co., Limited, Stratford

Probably the most interesting feature of this exhibit was their demonstration of the Royal Easy line of chairs as manufactured by this Company. In addition they showed a number of attractive chesterfield suites in various coverings and designs. Walnut and Taupe Mohairs were also in evidence, in fact the demand seems to be largely for this style of furniture.

Snyders, Limited, Waterloo, Ontario

Sani-Bilt moth proof furniture was the feature of the display made by this company. The exhibit was designed more to arouse interest in the idea of reliable, sanitary, upholstered furniture and in their moth proof feature, rather than to draw attention to their complete line of upholstered furniture. As outlined elsewhere in this issue this company are putting over a rather extensive merchandising campaign with a view to popularizing their line of guaranteed moth proof upholstered furniture. Samples of coverings both treated and untreated that have been exposed to the ravages of moths were shown. The treated covering was untouched, while that which had not been rendered moth proof was entirely ruined by the moths.

De Luxe Upholstering Co., Limited, Kitchener

This company made a very attractive display in the Industrial Building. Included in their showing was a number of attractive pieces in mohair and high grade tapestries. Both wood frame and roll arm were to be noticed in many of their pieces.

Queen City Furniture Co., Toronto

The feature of this exhibit was a special made to order over-stuffed suite in attractive two tone effect that conveyed the impression of extreme comfort. The chairs were of a semi-circular design and had fairly high backs. Some of the pieces were covered in mohairs, cut patterns being quite prominent. The display was tastily arranged and received considerable favorable comment.

Vulcanized Fibre for Chair Seats

Perhaps not an entirely new use, but one the merits of which should be quickly recognized, is the application of vulcanized fibre to chair seats. It is likely that most of us are familiar with vulcanized fibre as a tough material that will stand a lot of rough use. It is just this quality, this toughness, this resistance to wear, that should commend it to chair manufacturers as a substance that should make an extremely

Attractive fibre chair seat the product of the Diamond State Fibre Co., Toronto

satisfactory seat. In developing markets for their product the manufacturers of fibre have not overlooked this field as will be seen from the accompanying illustrations. These seats are the product of the Diamond State Fibre Co., of Canada, Limited, Toronto. These serviceable seats may be had in a wide variety of embossed designs and grains and in a number of colors.

Fischman Spring Exhibit

Of interest to upholsterers was the exhibit made at the C. N. E. by the Fischman Spring Co., Kitchener, Ont. This consisted of Fischman Cushions for upholstered chairs and settees, Fischman rosettes, Fischman ventilated and box spring mattresses and other products of a similar nature. The spring cushions manufactured by this firm are much favored by upholsterers for chesterfields and other pieces requiring loose cushions. The display was attractively arranged and showed the Fischman line to good advantage.

Joins Institute as Forest Economist

The Hardwood Manufacturers Institute, Chicago, recently announced that David G. White has joined their staff as Forest Economist and as an assistant to Secretary-Manager J. M. Pritchard. Following out the principles and the establishment policies which the Institute stands for, it is expected that it will now be possible to carry forward additional constructive work dealing with the economics of the hardwood lumber industry and a national forest policy, especially as it relates to reforestation, forest protection, and the application of the correct principles of forest taxation. Close co-operation will be maintained with the individual states and the Forest Service of the Department of Agriculture on economic studies, and the Departments of Agriculture and Commerce on standardization.

FISCHMAN
TRADE MARK
SPRING COMPANY

Quality Spring Goods

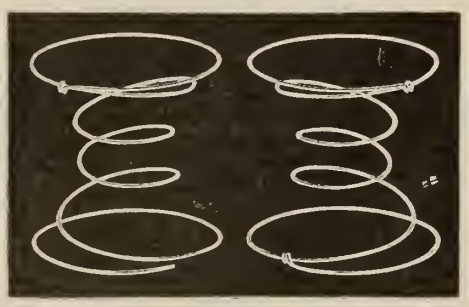
for the Manufacturer and Upholsterer

Fischman Ventilated Spring Mattress.
Fischman Ventilated Box Spring.
Fischman Ventilated Combined Box Spring and Mattress.
Fischman Ventilated Spring Pillows.
Fischman Spring Upholstering Cushions.
Fischman Upholstering Constructions.
Fischman Spring Rosettes.
Fischman Ventilated Chair Pads, Etc., Etc.

Fischman products enjoy an enviable reputation for consistent high quality in all lines. They are the choice of manufacturers and upholsterers who take pride in the superior construction of their furniture. Get our prices.

Fischman Spring Co.
KITCHENER — ONT.

"IDEAL"
FURNITURE and UPHOLSTERY SPRINGS



Double or single cone, plain or knotted ends, in any height, shape or gauge of wire.

All "Ideal" Springs are made of "Premier" Brand—the best steel spring wire obtainable. Before shipping, the springs are japanned and heat-treated, giving an enamel finish and making the spring more resilient.

Catalogue and prices on application.

MADE IN CANADA by

Ideal Fence & Spring Co.,
of Canada, Limited
Windsor - Ontario

Finishing Room Materials

Turpentine
Sandpaper
Rotten Stone
Pumice Stone
Chamois
Steel Wool

SHELLAC

Sanderson Pearcy & Co. Limited
272 Van Horne St., Toronto, Can.

Preferred
by Careful Buyers

Samurai Enamel

Cameo Under-Coat

Formulated to meet the needs of furniture makers, Samurai Enamels, gloss or matte, are superior in wear, hiding power and in their perfection in sanding and rubbing.

Folder showing complete colorings sent on request.

Denny, Hilborn, & Rosenbach
Chicago **Philadelphia**
N. J. Greene, Canadian representative

MARIETTA WOOD AND METAL FINISH SPECIALISTS

STAINS - FILLERS

The largest manufactuer of talking machines in the world uses Marietta Stains and Fillers extensively.

Samples furnished free

The Marietta Paint & Color Co
Main Office and Factory, Marietta, Ohio
Southern Office and Factory: High Point, N.C.

A Better FINISH

You can improve the appearance and durability of your finishes and increase the saleability of your furniture by using

Cosmos High Grade Lacquers and Lacquer Enamels

Lacquer gives a permanent, waterproof surface that is tough and durable.

It dries rapidly, increasing the output of the finishing department. Successive coats may be applied at half-hour intervals, enabling work to be finished in one day.

Samples, prices and other particulars gladly furnished.

Our Specialties:

METAL LACQUERS
WOOD LACQUERS
ENAMELS
BRONZING LIQUIDS
EUREKA AIR BRUSHES
AMYL-ACETATE
REFINED FUSEL OIL
COLLODION
BRONZE POWDERS
MATCHLESS METAL POLISHES AND BUFFING COMPOSITIONS
BANANA OIL

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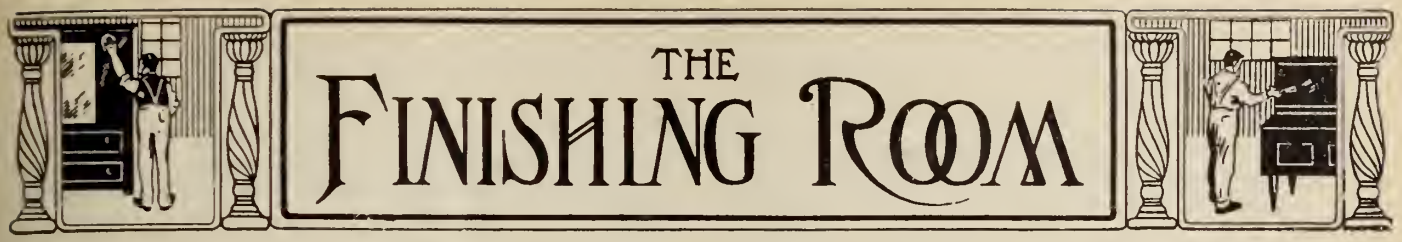

How to Gild Furniture

Considerable Skill is Required to do a Job in Gold Leaf—Outline How this Operation is Performed

Gilding is frequently employed to advantage in the decoration of furniture. Gold is used either to cover the work entirely or it may be partially treated, the mouldings, carvings, and other decorative features only being gilded. The process is one which needs experience, skill, and in the final stages great deftness in handling the gold leaf, says a writer in the Cabinetmaker. The furniture which is to be gilded is first prepared by coating it several times with a mixture of gilder's whitening and size. The number of coats of whitening depends upon the nature of the wood, but the aim is to get a perfectly smooth and even surface. In cases where joints might be likely to open with age or wear the careful gilder covers them with woven silk when applying the first coat of whitening. Each successive coat is allowed to dry very thoroughly, and the work is then subjected to a process known as drawing up and smoothing in water; this needs considerable care and experience, as upon it depends the ultimate effect of the gilding. A layer of gilder's clay and size is then applied with a brush. When the coating of clay is absolutely dry, a coating of burnished gold size is applied to those parts of the work which will be burnished subsequent to the application of the gold, and in modern practice those parts which will remain matt are treated with matt gold size.

Burnished Gold

The burnished gold size is made in two colours, red, and blue. The Germans almost invariably use blue, while the French employ red, but there is no such hard and fast distinction either in England or Italy, where red and blue are employed indiscriminately.

The burnished gold size being thoroughly dry, the work is ready for the application of the gold leaf. The leaf is placed on a gilder's cushion, which consists of a piece of board about 10 in. by 5 in., with a leather loop below through which the thumb of the left hand is passed. The top is covered with a soft leather pad on which the gold is cut with a gilder's knife. One half of the gilder's pad has parchment sides so arranged that they stand about 3 in. above the surface to prevent particles of gold from falling when the gilder flattens the leaf on the pad by gently blowing on it. The gold leaf having been spread quite flat by this means, the gilder cuts it to the size he requires. The portion of the leaf to be applied to the work is lifted from the pad by means of a flat camel-hair brush about as wide as a man's hand, the tip of which the gilder passes through his hair before picking up the gold leaf. The leaf readily adheres to the brush. The position to which it is to be applied having been previously moistened with water, the gold leaf is placed on it. When quite dry the leaf is rubbed with a burnisher made of agate.

Operation Sometimes Cheapened

All fine furniture, both past and present, is water gilt in this manner, but in less expensive work gold is applied to those parts of the work which will not be subsequently burnished by means of oil gold size. For instance, carving consisting of prominent foliage with deep hollows the high lights would be water gilt and burnished, and in the hollows where the gold would remain matt it would be applied not by means of water, but on oil gold size.

Gold leaf is supplied by the beaters in many colours, ranging from white and very pale yellow to deep gold. Gold of a pale green shade is also obtainable.

In German gilding different materials are employed. The building-up process, the employment of whitening and size, gilder's clay and size, etc., is just as has been already described, but instead of gold leaf silver leaf is applied, treated if desired with a burnisher, and then lacquered with a gold-coloured lacquer to give it as far as possible the appearance of genuine gilding. A less expensive method still is to gild the parts that are to remain matt with some metal other than silver or gold, and to treat the parts that are to be burnished with silver. What is known as "German gilding" is inexpensive and effective, but it does not compare favourably in appearance with the gilding which is produced by the application of gold leaf.

Practice Handed Down From Early Designers

From early times craftsmen have sought to give additional richnes to their embellishment of furniture by touches of gold; the lacquer work that gained so great a popularity in the latter part of the seventeenth century, and was still more popular during many years of the eighteenth century, was enriched with delicate gilded ornamentation. The colour of the lacquer, black, scarlet, yellow, or whatever hue it may have been, was netted over with a fine lacework of gilded patternings. Many of the great periods of furniture making gave a prominent place to the art of the gilder, and, apart from the treatment of carving and enriched mouldings with gold, the gilding of canework panels in beds, cupboard doors, and so forth, gained favour.

Bleached Walnut Finish

One of the outstanding features of the "Made in Stratford" exhibit at the Canadian National Exhibition this year was a Grand Master bedroom suite in bleached walnut finish, which was being shown by the McLagan Furniture Company, Limited. The

attractiveness of this finish is rather difficult to describe. It is only natural that this suite should have commanded attention because it was unusually attractive in design and as is to be expected in a product of the McLagan Company, the workmanship was above criticism. Probably the most outstanding feature was the rare beauty of the grain and the unusual depth and tone of the finish. It was difficult to recognize walnut in this beautiful light coloured wood, and while in appearance the general effect seemed to resemble mahogany, yet to one familiar with this latter wood, the grain was not that of mahogany. It has been said that the appeal to the eye is responsible for many furniture sales. In that event this suite and this finish should prove to be extremely popular.

What is the Ideal Finish for Furniture?

What Quality Should a Finish Possess to Satisfy all Requirements—Not Likely That Present Day Finishers Will See Ideal Attained—Improved Finish Would Increase Saleability of Furniture

By G. W. Downs*

In the Metropolitan Museum of Art in New York City, there are several mummy cases which should be an inspiration and something of a revelation to both the manufacturer and user of wood finishes. Although the varnish which protects these wooden cases was applied more than 2000 years ago, it is surprisingly free from checks and crazes, it still adheres well and shows few or none of the defects commonly associated with wood finishes. At first thought this would seem to be the ideal finish for furniture, but upon further consideration you will realize that other qualities must be considered. If we could make such a varnish today we do not know how long it would take to dry, what process must be used for applying it, how much abuse it would stand if put on a modern dining room table, how hard it would be and whether it would stand steaming hot dishes?

Features That go to Make Ideal Finish

Let us theorize a little but about this ideal or perfect finish. After careful consideration, I have set down the following qualities which this finish should possess:

The Hardness of a diamond, to prevent: printing, scratching, marring.

The Toughness of leather, to prevent: cracking, flaking.

The Flexibility of rubber, to prevent: checking, crazing.

The Water-proofing qualities of glass, to resist: steam, hot or cold water, perspiration, other liquids.

The Transparency of a watch crystal: to show the beauty of the wood.

Instantaneous drying: to save time and increase production, to increase production, to prevent dust sticking to surface while drying.

The Permanency of the Egyptian Pyramids.

A more perfect ideal could probably be arrived at theoretically by further study, but a finish having these qualities would probably be satisfactory to most of us.

Now as a representative of the du Pont Company, I want to explain that we are not foolish enough to try to convince you that we have produced this ideal finish. If it is ever produced, we may be the first ones to manufacture it, but it is not likely that any of us here will be worrying about finishes by that time. But we do claim that with lacquer we can show you how to produce a finish that more nearly approaches this ideal than any finish that can be produced today with shellac or varnish.

Desired Qualities Compared

In support of this statement let us consider these qualities individually: The hardness of a diamond. Of course lacquer is not that hard. You can cut it with a knife. But it is considerably harder than varnish, and will not scratch white on a finger nail test. A printing test made by one of our customers showed that a lacquer finish on a sewing machine cabinet did not leave print marks when subjected to a pressure of 950 pounds per square inch, while their varnish finish was absolutely ruined under a pressure of 300 pounds.

The toughness of leather. This is a rather difficult quality to illustrate or test. It goes hand in hand with hardness to produce wearability. Make your own tests for this quality, with a pencil or hammer, and you will find that the lacquer finish is far superior to varnish or shellac in this respect.

The flexibility of rubber. As a table is not likely to be bent after it is finished, this quality is of value only when considering the expansion and contraction of the wood, due to atmospheric changes. You all know the result of extremes of temperature of a good varnish finish. Lacquer remains so flexible that it will never check or craze. I believe you will agree that a new finish showing only this remarkable improvements would be an unusual achievement, and of great value to you all.

The water-proofing qualities of glass. Here we more nearly approach the ideal. For all practical purposes lacquer is perfectly waterproof. That means that hot or cold liquids of almost any character, other than the type of solvents used in its manufacture, have no harmful effect upon it. A plate of scalding hot soup or a bowl of ice water could be spilled and left to do its worst on the finish without any harmful results. Even live steam from a leaking radiator would have no effect upon it. Will any other finish stand this?

The transparency of a watch crystal. This clearness and transparency makes the finish a silent partner in bringing out the beauty of the grain of the wood.

Instantaneous drying. This has not been attained. But a finish that is dry enough so that dust will not stick to it in 20 or 30 minutes, and that never

*E. I. du Pont de Nemours & Co., Inc. Address before Inter State Table Club; Indianapolis.

requires more than over night drying between coats, surely offers unusual advantages, and that is what we have accomplished. It means cleaner work and faster production, with the resulting improved quality and service to your customers.

The permanency of the Egyptian pyramids. Of course that is an unnecessary requirement, and it has not been attained. But take this into consideration. All modern varnishes contain linseed oil, and linseed oil will continue to oxidize as long as it is exposed to air or moisture. This oxidation is like rust on iron, and will continue until all of the oil has completely disintegrated. Lacquer contains no linseed oil or any ingredient that will oxidize. It dries entirely by evaporation, and there is therefore no change in the character of the film deposited, after the solvents have evaporated. This means that a polished finish will stay polished, and a dull rubbed finish will stay dull.

Resistance to Heat

A quality that does not correctly come under any one of these headings, but which is a result of a combination of several, I believe is also due careful consideration. That is the resistance of a lacquer finish to hot plates or dishes. A finish that will stand the most severe tests of this character will surely be welcomed by manufacturers of tables.

Now it is quite likely that some of you gentlemen are thinking, how much is this finish going to cost? What will it mean to me in dollars and cents? That's what I am interested in. I am not interested in Egyptology or theories or even the ideal finish, unless it is going to mean real money in my pocket. So, let's get down to brass tacks and silver dollars.

An increase cost per gallon of your finishing material sometimes looks big if you multiply it by the number of gallons used in a year and then consider only that figure. But wouldn't it be more logical to consider the cost per table? Your profits are derived from the number of tables that you sell and the number of dollars and cents margin of profit that you make on each table.

Influence on Volume of Sales

If the finish on your products possess the unusual qualities which I have described, it will surely be possible for your sales department, to sell many more pieces. If we can sell you on the increase value of this finish you can surely sell your jobbers and retailers, and they, in turn, will be glad to have this unusual talking point to help them sell the ultimate consumer.

I know very little about your volume of business or your profits per table, but let us take a hypothetical case. Suppose you are making 4,000 tables in a year at a profit of $3.00 per table. That will give a net profit of $12,000. Now let us assume that lacquer will enable you to increase your sales at least 50%, giving a sale of 6,000 tables without increasing your investment in equipment or drying rooms one penny. If we estimate that this finish costs you 25c more per table and you do not add that on to your selling price your profit would be reduced to $2.75 per table, but on 6,000 tables you would come out at the end of the year with $16,500 profit instead of $12,000. But surely with a finish possessing unusual qualities on your product, with the selling advantage it would give you, you could add that 25c or even a dollar on your price, and still show the same increase in your sales. This would mean still greater profits, so that the increased cost per gallon of lacquer would in the end result in real money in your pocket.

Can you get the jobber and retailer and the ultimate consumer to buy more of your tables at an equal or slightly advanced price, if they are finished with lacquer. I have decided opinions on that subject but you answer the question. Here is a table for $18.00 finished with varnish. You know how much abuse that kind of finish will stand, and you can form some idea of how it will look after a few years of hard service. Here is another table for $19.00 or $20.00, finished with lacquer. The finish possesses all the remarkable qualities which I have described. You can move from house to house or city to city seventimes in eleven years, as I have, and then your finish is going to look practically the same as it did when you bought it. Would the one or two extra dollars be a good investment? Which table would you buy?

Eliminating Several Finishing Operations

An interesting story appeared in a recent issue of the "Marietta Message" the house organ of the Marietta Paint & Color Co., Marietta, Ohio, outlining how a New England furniture manufacturer was shown how he could eliminate four operations without sacrificing the quality of his product. As this story has a message for all who are interested in improving their methods and reducing their costs, it is being reproduced herewith.

A New England furniture manufacturer was traveling in the South for the first time and stopped at High Point, N.C., to see what others in his industry were doing. He had never traveled or read a great deal, consequently knew very little about what was going on in the industry outside of his own plant. Much to his surprise, he found plants with no more modern or greater amount of equipment than his own turning out a volume that made his plant seem small in comparison.

After some conversation, it developed that he had been using old-fashioned methods in finishing his product. Because he had not traveled or read any of our advertising literature, he did not know of the more modern methods of getting the results he was producing by more round about methods. Our representative took him to one of the big factories where our Uniforming Stain is being used. Here he saw them apply the stain, a coat of substitute shellac and two coats of varnish and produce as beautiful results as he was getting. They were using several kinds of wood, but the finished product was coming out with a uniform color. He could hardly believe it.

The manufacturer had been using a water stain, which of course made sanding necessary, filler, a coat of pure shellac and four coats of varnish. Think of the operations he could have saved by using the new method. Think of the additional volume and profit he had been missing, all because he failed to keep up with the times through reading or travel.

Information gained through visiting other manufacturers is always valuable and nearly always justifies the expense of travel. But even that isn't necessary. Nearly everyone will admit that it pays to read and travel, but it isn't everyone who will admit that it pays to read advertising. Doesn't this prove that it pays to read advertising that has a bearing upon your business?

French Polish Defined

French polishing is generally understood to be the means whereby most of the woodwork of our household furniture and pianoforte cases is given a mirror-like finish through which is reflected the beauties of nature's handiwork in the figure or markings of the wood—more or less beautiful in its effects according to the skill of the cabinet makers in piecing the various parts together—whether they be the solid woods or faced with veneer.

The method of bringing about this finish permits great variations and choice of materials; the main thing is that it should show no brush marks, wear well, present a face to which dust will not cling, yet be capable of being readily freshened up when required without the aid of professional labor.

Continued Activity in Building Field

During August, construction contracts awarded in Canada, according to MacLean Building Reports, Limited, amounted to$27,488,700, compared with $25,-187,500 a year ago. Residential building accounted for 31.3% of the August total, and amounted to $8,-630,900. Business building amounted to $7,762,500, or 28.2%; industrial building $1,778,500, or 6.5%; public works and utilities, $9,316,800, or 34%. The value of contemplated new work reported during August amounted to $32,374,900.

Construction contracts awarded during the first eight months of 1923 amounted to $223,654,400, compared with $184,333,700 during the corresponding period of last year. The increase amounts to $49,-320,700, or 26.2%. Residential building during the first eight months shows a falling off of 4% compared with last year, but continues to dominate the various types of construction, with a total of $68,326,400 for the year to date. Business building shows an increase of 17%, and the industrial group reflects the steadily improving economic situation with an increase of 66% over last year. Public works and utilities have been undertaken in large volume and record a gain of 55% for the period under review.

Ontario continues to show the greatest activity, and during the first eight months accounted for 50.7% of the Dominion total, compared with 56.3% during the same period of 1922. Quebec has had a very substantial rise in activity, the percentage of the Dominion total being 31.2% compared with 22.8% last year. Construction in the Maritimes has fallen off from 7.9% of the total last year to 2.7% this year. The Prairies and British Columbia remain at approximately the same percentage of the total, viz., 15.4% for 1923, as against 16.7% for 1922.

The trend of the business cycle with regard to the building situation indicates that new construction will continue in considerable volume. There is a great deal of work in prospect and a long continued period of prosperity in view for the building industry. Prices and wages are sufficiently stabilized to make it safe for contractors to bid on new work with the assurance that it can be carried through to completion and yield a reasonable profit. The mortgage market is still comfortable enough to permit a good volume of financing. Labor is fully employed at good wages.

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International varnishes are made **up to a standard**—not down to a price.

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A Logical Conclusion

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You can increase the Efficiency of your Finishing Room by installing

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And reduce finishing time 50%—
Dry varnish 8 times as fast—....
Improve the finish—..... ....
Lower the cost.

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Manufacturers of dryers for lumber, veneers, glued stock, varnish, paints, enamels, etc.

Ever Have These TROUBLES in Your Finishing Room?

—Quality of finish uncertain or falling off
—Production costs running too high
—Labor turn-over increasing
—Bad working conditions
—Delivery promises hard to meet

Unnecessary Troubles—every one of them, as thousands of the country's leading manufacturers gladly testify. These manufacturers at some time experienced a part or all of these difficulties. It's a different story now and has been ever since they investigated and installed the

DeVilbiss
Spray-painting System

If you have any of the finishing problems here outlined, or if you desire to improve finishing room operation, consider how the DeVilbiss System can help you.

This System's long and enviable performance record of making good in thousands of plants is due to equipment that is practical, complete and reliable.

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Walnut
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Birch
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Up to 1/4" thick

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NOTE—Shipments are made only of stock which has been piled in our warehouse for at least 60 DAYS, and is therefore THOROUGHLY DRY and FLAT.

Veneers and Panels

Here and There in Veneer Rooms

Constructive Suggestions Based on Methods Employed in Veneer Departments in Different Plants

By Observer

A Canadian piano manufacturer has adopted the policy of using 1/8-inch veneer on the top doors of his cases. This would seem to be a step in the right direction. There have been a number of men in the trade who have been maintaining for some time that the 1/20-inch veneer was too thin for stock that required much cleaning up, and veneered stock for fine cabinet work is certainly subjected to some reducing operations now-a-days when we consider first the run through the three drum sander, and then the scrubbing backwards and forwards on the belt sander to remove the scratches left by the three drum sander.

By this time the material reached the finishing room and received a coat of water stain the tissue paper thickness of veneer which remained started to raise and come loose in spots, necessitating relaying of the piece. These are the conditions that led up to the decision to use thicker veneer on the front doors at least. I don't know if it is the intention later to use the thicker material on the entire case, but it is working out satisfactorily on the doors at any rate. In the interior woodwork trade a good deal of thick veneer is used. All doors, even where they are for the interior of a dwelling where they are not likely to be subjected to atmospheric conditions any more rigorous than the furniture or piano in the same dwelling, are veneered with 1/8-inch and 1/4-inch veneer.

Is Thicker Veneer Advisable

One could understand the using of thicker veneer for exterior doors but for interior work it is difficult to understand why the veneer should be any thicker than for furniture or pianos, but I have never seen thin veneer, that is 1/20-inch stock, used for doors for a building.

Some may say the idea of the thicker material is to give the bench mechanics a better opportunity to clean up the junctions of the stiles and rails, but that argument does not carry much weight because a good proportion of the doors are of the slab type; there are no intersections of rails and stiles. This is true of interior doors as well as the exterior. Slab doors relieved only by a strip of inlay about eight inches from the edges have become very popular for interior use in some of the better class dwellings, and they make an attractive door.

There is a strong possibility that the veneer used for pianos and furniture may be too thin for some of the cleaning up processes now in use. The veneer scraper was the ideal method of cleaning up veneered stock to the minds of a good many men in the trade, but for some reason or other the scraper is not so popular as it once was. Several Canadian furniture factories still use them for some of their work, while others have disposed of them at a sacrifice, the reason not being very plain. I guess the main reason would be lack of a capable man to keep the machine in condition and run it. One piano factory superintendent claims that this is the reason at any rate. He has not a scraper but would like to have one.

The scraper is not so hard on the thickness of the veneer as the three drum sander. It takes off a shaving like silk and leaves a beautiful surface, which only needs touching up with fine sandpaper to make an ideal surface for the finisher to work on. One piano factory in Toronto, a large one at that, is still using the scraper, and doing excellent work on it.

The vegetable glue now so generally used has relieved the sanding situation to some extent. Animal glue was bad for penetrating the veneer, whereas stock glued with the vegetable glue comes from the press a good deal cleaner than similar stock glued with animal glue, and thus does not call for so much sanding.

Handling Stock

Some firms are rather lax in handling their veneered stock when it is taken from the press. They leave it lying around on trucks for some time before piling it away, which is about one of the worst things that could be done. Stock removed from the press starts to warp almost immediately if not carefully piled away between strips. There are still some firms who edge all of their work when it is taken out of the press and before it is piled away. This is one of the most useless operations around a factory. The stock should be piled away immediately after being taken from the press instead of being left around while the edging process is carried out with a drawing knife. The edging is best accomplished after the stock is thoroughly dry by trimming the various parts to their finished sizes on a trim saw using forms. This accomplishes two things, cutting stock to finished size and edging at the same time. This method has been illustrated in the "Canadian Woodworker" in the past, and I have been surprised that any plant is so old fashioned as to be working away with the drawing knife to trim edges before piling the stock.

The first thing in piling veneered stock is to have proper strips. They must be all the same thickness, or the stock piled will be forced out of shape by the difference in thickness. Veneered stock carefully piled or an even foundation immediately on removal from the presses with strips of equal thickness will not give trouble when allowed to dry under these conditions. However, there is no use taking these precautions and then removing it from the piles before it has had proper time to dry. This is sometimes done by careless mechanics. I have seen men make mistakes in laying veneer by laying the wrong stock first, with the result that the stock when wanted

by the machine department would not have been in the piles a sufficient length of time to dry. To cover up his mistake in laying the wrong stuff first the veneer room foreman would say nothing about the length of time the stock had been in the piles, with the result that practically green material would be taken to the saws. Then when piled loosely on the trucks it would begin to warp, and the reason for this would not be apparent to those in charge of operations. A frank statement of the mistake in laying the wrong material first can usually be straightened out by switching the batches and taking the batch that had been longest in the piles. There is a term, or expression, used in golf, "follow through," which can be applied to veneering. For good results the stock must be followed through and followed through carefully from the moment it is removed from the press until it is thoroughly dry and ready for the machining and finishing operations. We are assuming, of course, that the rules of gluing and preparation of the core stock have been carefully complied with.

Redriers Aid to First Class Work

Good veneered work can be done without a redrier, but to do so requires a long round about road. Many firms are putting in redriers now. Two instances that came to the writer's attention recently were a plant making office furniture and a piano factory. Sizes are obtainable now to suit the requirements of any plant, and a redrier is a piece of equipment that will pay for itself in a short time.

If a redrier is not part of the equipment it is necessary to do the redrying by means of placing the veneer between hot cauls or else by putting it in racks and putting these racks in the caul heater. This latter method is a poor substitute for the redrier, because the stock is not dried flat. It is possible to get veneer flat by drying it between cauls but it is a very slow process, and consequently a very costly one in a plant that has much drying to do. As costs are the thing to be eliminated these days any plant with much veneering to do will do well to give serious consideration to the installation of a veneer redrier.

Canadian manufacturers of veneered products are able now to procure redriers without paying duty on them from the United States. One well known American manufacturer of redriers has made arrangements with a Canadian firm to make their machines from their patterns for the Canadian trade. There is also another Canadian firm turning out a redrier.

The two firms mentioned above as having installed redriers are the Office Specialty Mfg. Co., Newmarket, Ont., and the Williams Piano Co. Ltd., Oshawa, Ont. The former company have a Merritt machine, made in Canada by Cowan & Co., while the latter have a Perrin redrier, one of the smaller sizes.

There is a strong tendency among woodworkers in every line where veneering enters into the operations to put mechanical equipment in the veneer room. This is true of the planing mills as well as the furniture trade. T. H. Hancock, who operates a planing mill in Toronto, recently installed a veneer jointer. Planing mills are getting further into the veneering end of the business all the time. Many of the higher class residences call for panel work of a high quality, and the better class planing mills are called on to do this work. That the work is increasing is answered effectively by these firms putting in machinery to handle it.

Problem of Dry Veneer and Crossbanding

Outline of Redrying Methods in Use at Various Plants—Attempts to Eliminate Necessity of Redrying Operation—Combination Veneer Kiln and Conditioned Storage Giving Satisfaction

By P. J. Quinn

The proper drying of veneer and crosshanding is one of the most important operations, if not the most important, requiring attention in the production of articles in the manufacture of which veneer enters to any extent. This is so, because if this phase of the work is not handled carefully and thoroughly, trouble in the shape of open joints and checks is almost sure to be experienced. As such defects reduce the saleability of a product, as well as often necessitate costly repairs and replacements, it is only fitting that the desirability of having such stock dry should be strongly emphasized.

There are many ways in which the drying of veneers is attempted. Some of these methods are of doubtful value because the results are more or less uncertain, that is as to the uniformity of the drying and also with regard to the final moisture content secured. A method that brings the veneers down to say six or seven per cent. is better than not attempting to dry the stock at all, but the results will not be as satisfactory as were more of the moisture to be removed.

Hot Caul Method Still in Use

In some plants the face veneers are dried by placing them between hot wood cauls. In addition some veneer men make a practice of sponging the material with hot water before placing it between the cauls. Such a method is slow and costly and while it does result in producing straight stock, there is little if any assurance that the final moisture content bears any relation to that which is aimed at. This is so because of the number of variables which have a bearing on the final result. If the initial moisture content were the same in all the pieces of stock being dried, if the cauls were heated throughout in the same uniform temperature and if other factors such as drying time, species and texture of stock, etc., were the same day after day then uniform results might reasonably be expected, but with each one of these elements varying almost with each piece dried it stands to reason that the results secured leave much to be desired in the way of uniformity and dependability.

In certain respects the hot room method of drying veneers is an improvement over the hot caul method. By maintaining uniform conditions of a known E. M. C. uniform drying to the desired moisture content would seem to be assured; that is provided the drying period is sufficiently long. The

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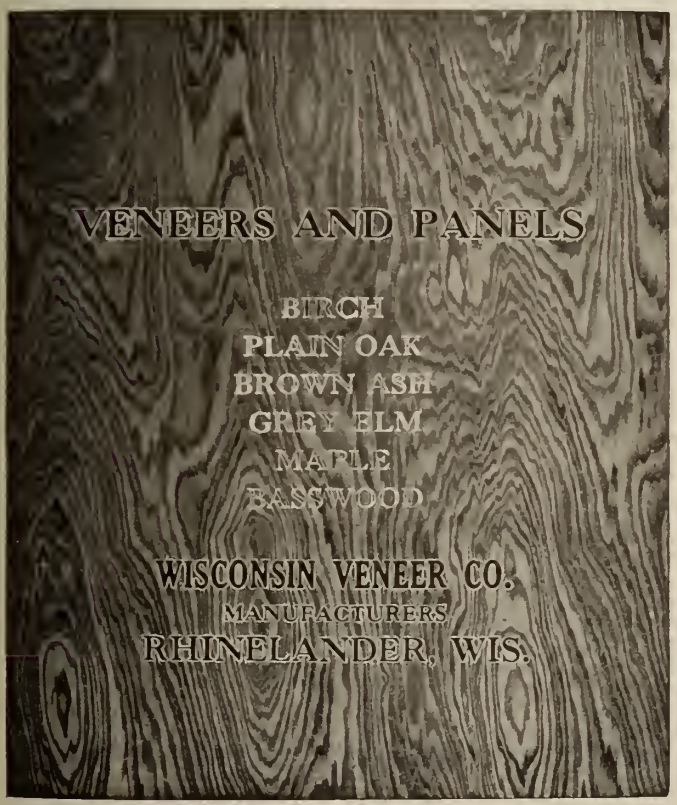

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(When writing mention Canadian Woodworker)

trouble experienced here has to do largely with keeping the material straight. Some have tried suspending the sheets of veneer in the drying room, others piling edgeways in special racks, while still more pile flat with stickers between the different layers, but it is difficult to secure flat stock as the material exhibits a strong tendency to buckle and curl. In addition the drying losses run fairly high. However, as intimated before uniform drying is apparently assured.

Mechanical Redrier Ensures Flat Stock

In many plants the hot-plate type of redrier is employed. With this equipment the sheets of veneer are placed between steam heated plates which open and close in a bellows-like breathing movement. The temperature of these plates can be controlled within reasonable limits and the stock comes out straight and flat. Unless the time in which the material is allowed to remain in this drier is calculated to include a factor of safety to take care of all variations in the texture of the stock and in the initial moisture content, there is no definite assurance that the stock is as dry as required. By that is meant that of two pieces placed in the drier one might contain ten per cent. moisture while the other might have fifteen or eighteen per cent.; one might have come from the top section of a pile of veneer while the second might have been further down in the pile. Unless the drying time allowed made allowance for such variations the piece which originally contained ten per cent. might come out with two per cent. while the other might run from seven to ten. In addition, unless this machine is carefully operated, trouble is often experienced from both end and surface checks and with quartered oak the flakes sometimes seem to burst or explode. Because of the fact that this method produces flat stock having an average low moisture content is looked upon with favor by many plant managers.

As the use of either hot cauls or a hot plate redrier means an additional redrying operation, in some plants an effort has been made to use conditioned storage rooms and thus at all time ensure a supply of dry veneers without having recourse to a redrying operation. Theoretically this appears to be the ideal way but it does not work out quite so good in actual practice. In the first place it has been found difficult to keep the material straight and yet have it readily available as required. Special racks of various types have been tried but the results have not been altogether satisfactory. Then the question of circulation presents more or less of a problem for unless the air moves freely through the piles of veneer the stock is very slow in coming into balance with the E. M. C. of the surrounding, controlled conditions. This must not be taken to mean that these attempts have failed entirely, for such is not the case as many users are satisfied with the results secured, but there is plenty of room for improvement. Another weakness is that the stock should remain in these rooms for a month or more, so that when it is found necessary to work up material that has been but recently received, is not safe to put such stock into production without first removing all surplus moisture. From this it will be seen that under such a plan the length of time the stock has been in the conditioned storage is a factor that must be considered.

This method has also been approached from a different angle with gratifying results. It is a well known fact that wood does not tend to warp, twist or curl as long as its moisture content remains constant. That would seem to indicate that were it to be held flat and dried uniformly to some predetermined moisture content and then stored in conditioned room the E. M. C. of which is the same as the moisture content of the dried veneer, such stock would not change either shape or moisture content as long as the E. M. C. of the storage room were held constant and thus would be quickly available as required and always ready for jointing and laying.

With this in mind certain plants have constructed special veneer drying kilns which are operated in connection with conditioned storage rooms. As veneer and crossbanding is received from the manufacturers it is placed in the kiln and dried to a definite moisture content, being held flat during the drying operation. It usually remains in the kiln for five or six days or even longer depending entirely on the schedule adopted. When removed from the kiln the stock is straight and dry. It is then immediately placed in the conditioned storage room where it remains until required. It may safely be removed and laid-up without any redrying, provided of course that it is not permitted to remain in the glue room for an indefinite period.

This last method is now in operation in a Canadian plant and will be described in detail in an early issue of the "Canadaian Woodworker."—The Editor.

Plywood Manufacturers Adopt Sales Code

The Plywood Manufacturers Association recently held its twenty-third annual meeting in Chicago. Many questions of interest to the industry were discussed.

Commissioner Wulpi urged constructive action and close co-operation on the part of all members pertaining to the many problems confronting the industry. In his report he outlined the activities of the association and touched on the action of last June as a result of which the plywood association resumed its individual efforts.

Of interest to both plywood manufacturers and users in the "Code of Ethics" which was discussed and adopted. This is reported as follows:—

The members of the Plywood Manufacturers Association consisting of manufacturers of plywood believing that it is for the best interest of any individual or firm engaged in the manufacture and sale of the above mentioned product, as well as for the industry as a whole, that clean, honorable and legitimate business customs should prevail in this business, and that they should be followed in buying, in selling and in competition with others engaged in the business—present in the following articles a statement of business policy which they believe should be followed by all parties engaged in this industry.

Article 1. Since the successful conduct of any business depends on the marketing of the product at a price which will net a reasonable profit to the manufacturer, that none of the products of this industry should be sold, knowingly, below a price which would return to the manufacturer the cost of production plus a fair percentage of profit.

Article 2. Since a knowledge of the cost of production is absolutely necessary to the successful con-

(Continued on page 82)

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WOODSTOCK, ONT.

View of sample room of C. L. Willey Company, Chicago, showing veneer samples on wheeled platform

Sample storage room in Willey plant, Chicago in which samples of various flitches are kept

Plywood Manufacturers Adopt Sales Code

(Continued from page 78)

duct of any business, manufacturers in this line should exert every effort to inform themselves of this subject and should aid their fellow manufacturers in securing a knowledge of this subject by any means in their power. Every manufacturer should have an accurate system of ascertaining the cost of every job, that the information derived from this system should be recorded so that it could be referred to and that these records should always be used in estimating special work so that every advantage of past experience might be taken and estimate made on actual facts rather than guess work. It is for the best interest of any manufacturer in this business to make both his general and cost accounting, uniform in plan with that in general use in this industry, and as outlined by our Association Cost Plan.

Article 3. There should be no misrepresentation of goods made to prospective purchasers, and no misrepresentation pertaining to business policy should be made to competitors.

Article 4. That the purchasers of the product of our factories should be impressed with the fact that the manufacturers in this line of business are trustworthy and honest and can be trusted to carry out any agreement and that they can safely place work with them without competitive bidding and be assured of first class workmanship, fair treatment and a reasonable price.

Article 5. That in selling, no graft should be tolerated and that no commission ever be offered or paid the parties in the employ of prospective purchasers.

Article 6. That as "knocking" is a practice unworthy of the business, no salesman should speak disparagingly of another salesman or competing firm.

Article 7. That when a manufacturer is offered work which he can not do, he should make it a point to refer the customer to another Association member.

Article 8. That it should be a duty and a pleasure to impart to less experienced competitors any knowledge of which may be of help to them as long as you have reason to believe that the information will be fairly used. This practice will tend to do away with ignorance and thus tend to eliminate a dangerous factor in competition.

Article 9. That any firm who authorizes any individual to solicit business and sell goods for them should see to it that the salesman is fully instructed as to the policy they propose to pursue on all matters referred to in this Code.

Article 10. That good feeling among the manufacturers engaged in this industry is for the best interest of all concerned and that therefore no manufacturer should judge the action or course taken by another manufacturer without full knowledge of all conditions in relation to the matter in question.

New Idea in Sample Room

The C. L. Willey Company, Chicago, Ill., recently completed a new sample room which embodies many unusual features as will be seen from the accompanying illustrations. The samples of the veneers shown are laid on rolling trays. This facilitates the handling of the stock, and enables the purchaser to give more attention to the selection of flitches that conform to his requirements, for under this arrangement samples representing millions of feet of veneers, covering all grades, figures, and woods, may be quickly brought before him.

Adjoining the main sample room there is another large space in which the different samples for the Willey representatives are sorted and stored, each bin containing stock specially selected for quality and price. This also assists the company in giving quick service in submitting samples as requested.

This new sample and store room is only one of the many improvements being made at the Willey plant. At the present time they are completing a new power unit consisting of three 300 h.p. boilers. A new railroad spur is being constructed that will enable them to bring their fuel right into the plant, and thus eliminate the expense of re-handling the coal.

Obsolete machinery is the foe of profits, the brother of high-cost and the friend of bad methods.

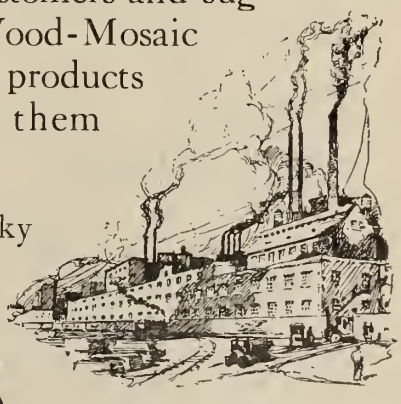
THE FORTIETH MILESTONE

LENGTH OF TIME is a poor measure of the distance a man has traveled on the path of progress. Deeds done and visions realized are a better gauge.

Wood-Mosaic is of course proud of its forty years of business life. Not because we've sold lumber and veneers over a long succession of weeks and months, but because the spirit back of our dealings has crowded these forty years with accomplishments worth while to both our company and customers.

New plants and mills have been built to care for increasing business. But business growth depends upon more than plants and mills. Wood-Mosaic's progress is due to our everlasting desire to give customers the best.

All our efforts in methods, machinery and management are directed to improve Wood-Mosaic service and the quality of our products. We believe our business today reflects the prosperity of our customers and suggests that Wood-Mosaic service and products have helped them to grow also.



WOOD-MOSAIC COMPANY, *Incorporated*, Louisville, Kentucky

WOOD-MOSAIC
LUMBER & VENEER

Formula for Water Resistant Blood Glue

A highly water-resistant blood albumin glue which can be applied without the use of a hot press has been invented by A. C. Lindauer of the Forest Products Laboratory, U.S. Forest Service. The development of this glue is the latest and most promising advance made as a result of the long continued search by the government laboratory for a satisfactory waterproof glue for wood.

The blood glues now used show considerable resistance to moisture, but all require pressing in a press with steam heated plates, a relatively slow process calling for very expensive equipment. The new glue, which is made by the addition of paraformaldehyde and ammonia to blood albumin, can be used with presses of the same sort used in gluing with animal, vegetable, or casein glues.

The cold press blood glue has greater water-resistance than any casein or blood glue hitherto tested by the laboratory and has sufficient strength for use in plywood. Plywood test specimens which were placed in the fungus pit of the Forest Products Laboratory under conditions of excessive humidity for a period of one year, required a shearing force of 300 pounds to break them apart, and specimens submerged in water for a period of one month proved to be equally strong. The U. S. Navy specifications for water-resistant plywood specimens of the same type call for a strength of 180 pounds after soaking for 2 days. The fungus pit condition endured for even a few months is known to be more severe than the 2-day submergence test.

Not only can this glue be successfully used in making plywood from thin veneer, but it has given excellent results with lumber of spruce and other species of low shearing strength. It cannot yet be recommended for gluing thick veneer or lumber of heavy dense woods, such as ash, maple, birch, and oak.

The ease with which the new blood glue can be spread and molded and its water-resistance may lead to uses parallel to those of the numerous synthetic gums and rubbers of similar composition.

In accordance with the usual custom in cases where patents are granted on the results of government research, the new glue formula is dedicated by the Forest Products Laboratory to the free use of the public.

The formula is as follows:

100 parts by weight of soluble blood albumin.

140 to 200 parts by weight of water (according to glue consistency desired).

5½ parts by weight of ammonium hydroxide (Sp. gr. 0.90).

15 parts by weight of trioxymethylene (paraformaldehyde).

The blood albumin is covered with water and the mixture is allowed to stand for an hour or two. When it is stirred at the end of this period, the blood albumin will for the most part go into solution. The ammonium hydroxide is added with more stirring. Then the trioxymethylene is sifted in, and the mixture stirred constantly at a fairly high speed. The trioxymethylene should not be poured in so rapidly as to form lumps nor so slowly that the mixture will thicken before the required amount has been added. Regardless of the manner in which the trioxymethylene is added the mixture will thicken considerably at this point. This thickened mass will become fluid again in a short time at ordinary room temperature and arrive at a good working consistency in about an hour, remaining in this condition for at least 6 or 8 hours. When this glue finally hardens it cannot be dissolved again in water.

The glue may be applied by means of a brush or mechanical spreader.

Several precautions should be observed in mixing and applying this type of blood albumin glue:

1. Weigh out all constituents. Do not use volumetric measure.
2. Add water at room temperature and do not heat the mixture.
3. Do not stir the blood until it has soaked for from 1 to 2 hours.
4. Avoid excessive stirring of the glue or agitation of the spreader, as this causes foamy glue.
5. Use sufficient pressure to insure good contact but not enough to crush the wood.

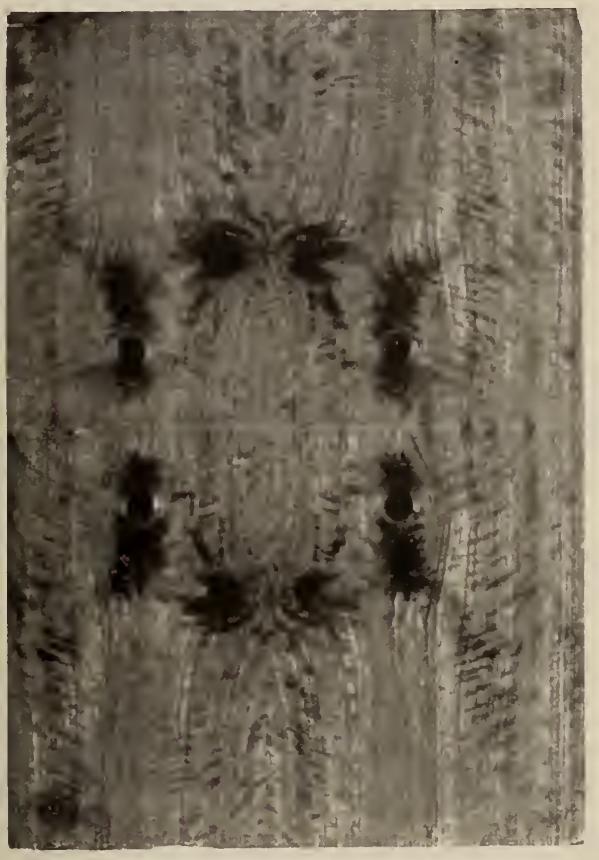
The fact that cold press blood albumin glue will solidify under water indicates that the "setting" of this glue is a chemical reaction and not a result of evaporation.

Preventing Accidents at Boring Machine

1. It is DANGEROUS to wear GLOVES while operating a boring machine. Many fingers have been lost by this practice.
2. Do not wear RINGS while operating this machine. They have caused many serious accidents.
3. Is your stock securely FASTENED to the table? Many painful INJURIES have resulted from HOLDING STOCK in the hand while drilling.
4. It is dangerous to WEAR long SLEEVES as they are apt to catch on the revolving drill.
5. Are all the GEARS on your machine properly GUARDED? Many fingers and hands have been LOST by having gears exposed.
6. Are there any protruding SET SCREWS on your machine? Such screws are UNSAFE and have been known to cause many accidents.
7. It is unsafe to wear ties, loose sleeves, or ragged or flapping clothing around moving machinery. Wear PROPER clothing and PREVENT accidents.
8. Have you a BRUSH or HOOK for removing chips? Many cuts have resulted from removing chips with the fingers.
9. If your machine is in need of REPAIRS, Notify your foreman at once. This may PREVENT an ACCIDENT.
10. Are your COUNTER BALANCE WEIGHTS in safe CONDITION? Chains attached thereto should be examined frequently to prevent spindle falling.
11. Wire should not be used for BELT LACINGS on the belt of the step pulleys. Wire lacing has caused many a painful cut.
12. Always STOP your machine when OILING. A minute lost may be a finger saved.
13. Adjust your table so that you have plenty of ROOM for the stock and keep your HANDS away from the revolving drill.
14. Keep the floor free from OBSTRUCTIONS AROUND your machine. This is a protection to others as well as yourself.

C. L. WILLEY COMPANY

The **Largest Veneer Plant** *in the* **World**



COME to the WILLEY plant for Veneer which satisfies the craving of cultured eyes for reminders of primitive outdoor beauty in the midst of indoor luxury. Send to us for samples appropriate to any use, adaptable to the expression of your ideals.

Veneer and Lumber

Walnut
American and Circassian
Mahogany
Quartered Oak
Satinwood
Vermillion
Teak
Rosewood

And Many Other Foreign and Domestic Woods

(2449)

The Call of the Wild

BY the light of the Hunters' Moon the wild beast stoops to drink! His phosphorescent eyes glow through the gloom! Burning with thrist he pauses, almost touching the cool coveted water, yet sensing the nearness of death. The hunter, hidden in the dense forest-shade, levels his gun!

Far away, in the hot crowded city, a weary business-man bends over his desk in a room richly paneled with WILLEY'S rare Veneer. Lifting his tired eyes suddenly he sees, revealed in deep toned-wood, a vision of the woods. A chance grouping of lines, drawn by the matchless pencil of living and growing fibres arouse his imagination, and brings back as if by magic the recreative power of the vast and primitive outdoors.

He leans back and draws deep breaths of freedom, while his memory is flooded with long-forgotten impressions of coolness, of forest-fragrance and of rustling depths of silence embroidered by strange and unreal sounds—

A moment later the vision fades. The man turns back to his work, rested and invigorated, filled with new courage and energy by the heal-touch of Nature revealed in a panel of WILLEY'S beautiful Veneer.

C. L. WILLEY COMPANY

2558 South Robey Street
CHICAGO

J. SMITH, Sales Representative
216 Mead Building, Rockford, Ill.

EARL VAN, Eastern Sales Representative
Everett Hotel, Jamestown, N.Y.

The Lumber Market

Imported Woods

Reports from various American producing centres seem unanimous on one point, that the demand for practically all woods is slowly but surely improving. Further the consensus of opinion seems to be that Fall business will reach a satisfactory volume. This is encouraging, for it seemingly marks the beginning of improved conditions in the furniture manufacturing and allied woodworking fields. Automobile interests are the leading purchasers, taking large quantities of thick ash, sap gum, elm, sycamore, and other woods. Stocks of these items are light everywhere and prices are strong. Some increase in buying by furniture manufacturers has also been noted during the last fortnight, while building interests continue to take a fair amount of lumber. There is considerable buying of sap gum, resulting in a steady strengthening of this wood to a point where distributors say that an early advance would not be at all surprising. Red gum is quoted $2 to $5 lower than a few weeks ago and a fair volume of orders is being obtained. Poplar in all grades and thicknesses is reported to have declined slightly and demand for this wood has shown some improvement.

The demand for northern hardwoods is particularly strong. Wisconsin manufacturers of hardwoods report that demand has attained a very satisfactory volume, but is often difficult to meet on account of the very low stocks of dry lumber. Some further price adjustments have been made during the last week in order to bring the various woods and grades into a more normal relation with each other from a price standpoint. Basswood has been marked down $5 on 5/4 and thicker FAS and all thicknesses of No. 1 common, and all thicknesses of No. 3 common are $1 off. Birch and maple in all thicknesses of FAS and selects have been reduced $5 to $10. All other grades of birch remain firm at previous quotations, and there have been only a few changes on maple in No. 1 common and below. Reports from Michigan say that volume and character of demand have shown no changes, and that prices are firmly held to the recently readjusted levels. Prices of all grades of northern pine are holding firm, and shipments show some increase.

Memphis, Tenn. A decided increase in the volume of buying is noted in the Memphis market. This is due to increased activity on the part of body manufacturers, though furniture manufacturers are entering the market in large numbers. Dry stocks are by no means large so that quotations are firm. The demand for sap gum is such that an increase in price is not improbable. The building industry is taking a fair volume of stock.

Louisville, Ky. Poplar, white oak, and ash are in active demand in this centre while gum, cottonwood and chestnut are in fair demand. This buying is being done by furniture factories, railway, automobile plants and millwork concerns. Prices show no change, other than that there is a little shading being done, but less than recently. Quotations: Quarter oak, FAS $140; common, $80. Plain oak $105 and $65. Poplar, $110 and $60; saps and selects, $85. Quartered or plain red gum, $105 and $60. Sap gum, $52 and $42. Walnut, $215 and $115. Ash, $100 and $60.

Evansville, Ind. Continued activity on the part of the furniture manufacturers is responsible for the satisfactory volume of lumber sales in this centre. Lumberman are looking forward to a strong demand for the balance of the year. The orders being placed are in excess of the corresponding month last year. The furniture industry in this centre is reported to be busier than at any time since 1918.

Buffalo, N. Y. The Buffalo market is feeling the effect of the usual midsummer lull. Prices are not as strong as they were but are expected to stiffen as the Fall demand develops. Stocks in the hands of the lumber users are reported to be light which would indicate that any improvement in the remanufacturing field will be reflected in the lumber market. What demand is evident is distributed over all woods.

Domestic Woods

The market for domestic woods is on the quiet side, although a certain amount of business is being done with American wood users, chiefly those connected with the automobile field. In the hardwood field prices are fairly firm, and while stocks are plentiful there is no surplus on hand. Flooring manufacturers are buying in considerable quantities, and it is expected that the furniture industry will enter the market in the near future. The consensus of opinion seems to be that there will be a steady improvement in demand during the next few months, and that present price levels will be maintained without a break. Hemlock is a trifle easier, while spruce is holding firm. Many of the larger producers are holding their stocks until the market shows some improvement. While the belief is that present values will be maintained, there is some speculation as to the trend of prices during the early part of 1924. All lumbermen are agreed that production costs will be higher, due primarily to the fact that men for the woods are not plentiful, and that wages are from 25 to 40 per cent. higher than last season. It is not unreasonable to expect that this increase in production costs will be reflected in lumber prices during 1924. The larger proportion of the stock now available is in strong hands, and price recessions are not to be expected.

Adaptability of British Columbia Woods

The wide application and adaptability of British Columbia woods is amply demonstrated by the showing made by the British Columbia Lumber Commissioner at the Canadian National Exhibition, Toronto. The principal feature in this exhibit was a small bungalow of unique yet attractive design. This was constructed of B. C. woods, the various rooms being each finished with a different species. The woods used in the interior were fir, larch, hemlock, cedar and cottonwood. These were so finished as to bring out the full beauty of their grains. The outside was shingled with B. C. red cedar shingles, a 24" shingle with 9" exposure being used on the walls. In addition to furniture of B. C. lumber, other articles such as wood pipe, doors in fir and cedar, shingles, boxes, crates, pulp and paper products gave an indication of the many and varied uses to which B. C. forest products are being put.

Gum

Oak, Ash and other Southern Hardwoods

Quality Justifies Price

Kraetzer-Cured Lumber Insures—

1. Freedom from warp.
2. Maximum quality.
3. Lower moisture content.
4. Less kiln drying Cost.
5. Uniformity.
6. Accurate grading.
7. Bright, unstained lumber.
8. Saving in working costs.
9. Dependability.

Isn't this the kind of lumber you're looking for?

Member of

HARDWOOD MANUFACTURERS INSTITUTE — SCIENTIFIC UTILIZATION — TRADE MARK

Occasionally a comment reaches us that Kraetzer-Cured Lumber seems a bit high in price. We welcome an inquiry of this nature because it permits an opportunity for comparison of price with the quality of the product. Such an opportunity was afforded us recently when the E. H. Stafford Manufacturing Co. wrote us as follows:

> "For a long period of time the writer had the impression that your lumber always was too high priced, but the stock we have been getting from you leads us to believe that it is very profitable lumber to use. We use the gum in question in the manufacture of church pews, office furniture and a number of other purposes."

When the finest quality of lumber is required by discriminating manufacturers of fine furniture, Kraetzer-Cured Lumber will meet the most exacting specifications.

> May we suggest to other careful buyers that a substantial saving in working cost and enrichment of reputation for dependability of goods manufactured, would logically result as it has in other cases, from the use of our product.

The Kraetzer-Cured Lumber Co.

Greenwood, Miss.

ON EVERY BOARD THE KRAETZER-CURED LUMBER CO. YOUR GUARANTEE OUR MUTUAL PROTECTION

Look for the Brand on Every Board

News of the Trade

N. L. Henderson, St. Laurent, P. Q., is reported to be in the market for woodworking machinery and supplies.

The Sanford Brush Co., Winnipeg, Man., was recently registered with a capital of $20,000.

Fire recently destroyed the premises of D. M. & G. A. Aird, casket manuacturers, Montreal.

Cyrrill Thiboult, St. Simon, P. Q. is reported to be in the market for equipment for a sash and door factory.

Henry Krapp & Son, Barriefield, Ont., manufacturers of boats and launches, suffered a fire loss recently.

The Colonial Store & Fixture Co., Limited, Montreal, is a new company recently formed to manufacture and deal in all kinds of store fixtures and equipment Capital $20,000.

Moore Bros., Machinery Co. Ltd., Montreal, P. Q. were incorporated to manufacture and deal in machinery of all kinds Capital $40,000.

The Boake Mfg., Limited, Dartnell Ave., Toronto, have purchased a mill site and will likely start the building of a new mill next spring.

The Satin Finish Hardwood Flooring Co., Limited Weston, Ont., are installing a National moistat kiln and report business as being exceptionally good.

J. H. McDonald, of the British Columbia Manufacturing Co, Vancouver, B. C., called upon members of the lumber trade in Toronto, recently.

The Warren Organ Co., Barrie, Ont, have started operations on their new factory on Simcoe St. The new building will be of concrete construction and the dimensions 60 x 22.

The City of Brockville recently leased the plant formerly occupied by the Office Furniture & Supplies Co., Limited to the Champlain Tire & Rubber Co., Limited.

Lantz Furniture Co., Limited, Toronto, is a new enterprise recently incorporated to manufacture furniture, upholstered goods, musical instruments. Capital $10,000.

Henri Briere, 97 St. James St., Montreal, intends erecting a sawmill at Duhamel, in Papineau County. The site will be at Chute au Pin Rouge on the Nation Rver.

Tenders will be called shortly for the new forestry school on Ste. Foye Road, Quebec, Que. The building will be four storeys high, 54 x 180 feet and brick and stone construction.

The Toronto Case & Store Fixture Company, Markham St., Toronto, has moved their plant to 130 Euclid Ave., Toronto.

It is understood Edwards Lumber & Pulp, Limited of Pembroke, Ont, are having plans prepared for the erection of a planing mill and that work will go ahead this fall.

The engine room and cooperage shop of the Hayne Milling Co., Point Edward, Ont., was damaged by fire recently, with a loss of $8,000.

The Canyon City Lumber Company, Creston, B. C. are erecting a large box factory. In this connection they have acquired a large tract of standing timber.

Lougheed Truck & Tractor Co., Limited, Sarnia, Ont., is a new company recently formed to manufacture and deal in motor trucks and tractors. Capital $750,000.

K. S. White was recently appointed manager of the woodworking department of the Boake Manufacturing Co., Limited Toronto.

Excelsior Products, Limited, 154 St. Patrick St., Montreal, were recently incorporated to manufacture and deal in wood products of various kinds. Capital $25,000.

It is reported that Geo. C. Haugh, Church St, Windsor, Ont., contemplate building a planing mill. It will be remembered that the Haugh woodworking plant was destroyed by fire some time ago.

The B. C. Fir & Cedar Co., Vancouver, B. C. are rebuilding the plant that was destroyed by fire some time ago. The new mill will be up to date in every respect, and will include both saw and planing mill equipment.

Through the Hon. T. D. Patullo, Minister of Mines and Forests for British Columbia, the people of B. C. have offered to aid the Japanese by furnishing a certain amount of timber for rebuilding purpose.

The Massey-Harris Co. Limited, are erecting at their Brantford, Ont., plant, three 40 ft. x 18 ft. x 11 ft. class D, Sidman Lumber Curing Kilns, with Green and Dry Storage yards.

Dunkley Baby Car Co., of Canada, Limited, Ford, Ont., is a new organization recently formed to manufacture and deal in baby carriages, automobiles, perambulators and other conveyances. Capital $50,000.

International Hardwood Co., Limited, St. Remi d'Amherst, P. Q., is a new organization recently formed to manufacture and deal in all classes of lumber products. Capital $48,000.

The Christie Woodworking Co., Limited, St. John, N. B., have secured the millwork contract for a new fabrication shop in course of erection at East St. John, by the St. John Dry Dock & Shipbuilding Co.

The Toronto Wood-Turning Company, Toronto, Ontario, are working on an order for 275 manual training benches which was placed with them by the Toronto School Board.

Dominion Glue, Limited, Kitchener, Ont., is a new company recently formed to manufacture and deal in glue and allied products. Captial $100,000. Two of the incorporators are William Forwell and L. C. Forwell, both of Kitchener.

The Telfer-Crowe Woodworking Co., Limited Bridgewater, N. S., have been given the order for the interor finish for the Public Health Centre, which is being erected at the Dalhousie University.

C. A. Bourdeau, 195 St. Catherine St. E., Montreal has been appointed representative in that city for the Buyers Door & Manufacturing Co., Limited, 374 Pacific Ave., Toronto.

J. Belanger, of St. Mathieu, Que., is erecting a sawmill and factory at St. Fabien, Rimouski County. The mill will be 100 x 60 feet, with concrete foundation, frame construction and corrugated iron roofing.

The Gibbard Furniture Co. Ltd., Napanee, Ont., recently installed a Preston ball-bearing sticker. This is a new machine that has recently been put on the market by the Preston people.

Barrett Bros., 260 Catharine St. Ottawa, whose lumber sheds and storage buildings were recently destroyed by fire, will shortly start rebuilding. The structures will be 30 x 65 feet and 20 x 99 feet.

Hall Bros., Limited, wholesale lumber dealers, have removed their offices from the Crown Office Building to the Continental Life Building, corner of Bay and Richmond Sts., Toronto.

The planing mill of the Thurston-Flavelle Lumber Company, Port Moody, B. C. is being operated overtime in an effort to take care of the demand for their products. Most of the finished material is beng shipped to the Prairie Provinces. The demand from the middle West has increased recently, due in part to the prospects of a satisfactory crop.

The Freezo Kitchen Cabinet Co., Limited, Vancouver, B. C. was recently incorporated to manufacture and deal in

Correct This Sentence:

"The Loss Was Fully Covered by Insurance."

No insurance policy covers the loss of time, loss of sales or loss of revenue, nor does it bring back the customers who make buying connections with your competitors while you are rebuilding.

An "Automatic" Sprinkler System is the only protection you have agianst such losses.

The Bennett & Wright Co.

Limited ——— Contractors

72 Queen Street East TORONTO

Western Ontario Branch

77-81 King Street London

Bond POWER TRANSMISSION

comprises

Hangers with Babbitt, Ball or Roller Bearings
Pillow Blocks
Flat Boxes
Mule Stands, Wall Boxes, Spiro Compression Couplings, Clamp Couplings.
Plate and Sleeve Couplings
Cast Iron Pulleys
Solid and Split Collars
in fact everything
for transmitting Power in Woodworking establishments.

also

Bond Ball Bearing Truck Casters.

For High Speed Machines use the Bond Ball Bearing Loose Pulley. Used extensively on High-Class Woodworking Machinery, it has given the utmost satisfaction.

Catalog 38 cw sent on request.

BOND ENGINEERING WORKS, Limited

Villiers and Munition Sts.
TORONTO

CHOOSING A SOURCE OF SUPPLY --

-- is not always an easy matter for the Lumber Buyer

YOU CAN DEPEND ON US --

-- our modern operation and experience insures you

QUALITY CO-OPERATION

Inquiries Solicited

PLAIN RED OAK
65,000 4/4 Fas
123,000 4/4 No. 1 Com.

PLAIN WHITE OAK
84,000 4/4 Fas
16,000 1/2 Fas
93,000 4/4 No. 1 Com.
34,000 1/2 No. 1 Com.

QTD. WHITE OAK
14,000 4/4 Fas
16,000 4/4 No. 1 Com.

PLAIN SAP GUM
23,000 5/8 Fas
32,000 5/8 No. 1 Com.
85,000 4/4 No. 1 Com.

PLAIN RED GUM
71,000 4/4 Fas
19,000 6/4 Fas
97,000 4/4 No. 1 Com.
83,000 6/4 No. 1 Com.

QTD. RED GUM
13,000 4/4 Fas
66,600 4/4 No. 1 Cam.

ELM
16,000 6/4 No. 2 Com.
18,000 6/4 No. 3 Com.

TUPELO GUM
32,000 4/4 Fas
30 000 4/4 No. 1 Com.

SOFT MAPLE
12,000 4/4 No. 2 & Btr.

KELLOGG LUMBER COMPANY INC.

FONDALE, LOUISIANA

cabinets, refrigerators, and other forms of kitchen furniture. Capital $100,000.

According to an Ottawa report the Martin-Orme Piano Co., Limited Ottawa, Ont., has received a tempting offer from Hull P. Q., in an endeavor to persuade them to locate their plant there.

The planing mill of Wm. M. Sullivan, Limited, and several million feet of lumber belonging to the firm were destroyed by fire recently at South Nelson, N. B. The sawmill of Mr. Sullivan escaped. The loss is $250,000 and only partially covered by insurance.

Wm. Hadley, President of the S. Hadley Lumber Co., Chatham, Ontario, recently passed away at his home in that city. Mr. Hadley was a well known lumberman and woodworker, and served for a term as presdent of the Ontario Lumber Dealers Association.

The many friends of A. K. Tyler, Toronto, will regret to learn of his death. Mr. Tyler, who was a son of Geo. K. Tyler of the Seaman-Kent Co., Limited, was salesman for the Garlock Machinery Co., Limited, Toronto, and enjoyed a wide aqcuaintance in the woodworking field.

The Canadian Wood Cement Co., Inc., 279 Visitation St., Montreal, manufacturers of "Bulldog Grip" wood cement, are at present manufacturing to capacity. A. P. Beaupre, for many years president of the Canadian Veneering Co., Actonvale, P. Q., is the general manager.

The New Hamburg Furniture Co., Limited, New Hamburg, Ont., was recently granted a provincial charter to take over as a going concern the Schierholtz Furniture Co. and to manufacture and deal in furniture and other wood products. Capital $100,000.

The Toronto Rattan Co., Limited, Toronto, Ontario were recently incorporated to manufacture and deal in reed and rattan furniture. Capital $100,000. Among the incorporators are J. G. Smith and F. W. Torrance, barristers at law, Toronto.

A by-law is to be submitted to the rate payers of Listowel, Ontario with regard to guaranteeing the bonds of the Blackmore, Hamilton Furniture Co., This company has requested that the City of Listowel guarantee their bonds to the extent of $15,000.

The College of Education, Toronto, which is part of the University of Toronto, recently installey the following equipment in their Manual Training Instructon Department:— Preston Motor Driven 30 in. Band Saw, Preston Pony Planer, Cowan foot power mortiser and Cowan foot power mitreing machine.

Enever & McManus, Powossan, Ontario are erecting a new woodworking factory to be known as the Powossan Planing Mills. The building is to be 56 ft. x 57 ft. two storeys high. This plant is to be driven with electric power. Sash, doors, interior finish and general woodwork will comprise the output.

Baptist, Coultair & Pothier, Limited, Three Rivers, P. Q., were recently granted supplementary letters patent permitting them to change their name to Baptist, Pothier, Limited. This firm, which is capitalized at $49,900 was incorporated to manufacture and deal in wood products of various kinds.

Armand Schreiter, Schreiters, Limited, Kitchener, has resumed the position of manager of the De Luxe Upholstering Company. Mr. Schreiter guided this company in its infancy and was instrumental in building up a large volume of business. He still retains his connection with Schreiters, Limited.

The Westinghouse Electric & Manufacturing Company, Philadelphia, Pa., has issued a new catalogue covering line material and porcelain insulators. The catalogue is supplementary to their large supply catalogues and has been issued for the convenience of purchasers of these two allied lines of materials.

The McCleary Lumber & Coal Co. Limited, Thorold, Ont., which was recently incorporated to manufacture and deal in wood products of all kinds, contemplate erecting a planing mill. The officers of this company are as follows: President A. E. Kaiser, Park Falls, Wis., Vice-president F. W. Moore, Thorold, Ont., secretary-treasurer, L. B. E. McCleary, Thorold, Ont.

Frank Stanley, Toronto, of the piano manufacturing company that bears his name, recently passed away. Mr. Stanley was a well-known figure in musical circles in Canada, having been manufacturing pianos since 1891. About three years ago, he took over the plant of the Cecilian Company and has been carrying that on in addition to his other factory.

The Pentanguishene plant of the Firstbrook Bros. Co. Ltd., Toronto, was recently destroyed by fire. The plant of the International Fibre Works, Pentanguishene, was also destroyed at the same time. The amount of the loss has not been definitely estimated, but it will be fairly high. As a consequence of this blaze, a large number of men will be thrown out of employment.

The employees of the British Columbia Mfg. Co., Limited, and the Westminster Shipmills Ltd, both of Westminster, B. C., recently held an enjoyable picnic. About 500 were in attendance. The president, R. L. Cliff and manager J. H. McDonald, took an active interest in the day's proceenings and were always to be found where the excitement was highest.

An industrial art school is being planned by certain American furniture manufacturers. This will be conducted in connection with the Art Institute of Chicago and will tend to develop greater interest in furniture designing and it is hoped will train designers capable of developing individual designs for furniture of all kinds. This will tend to place American furniture manufacturers in the forefront as leaders and developers of attractively designed furniture.

The Durham Furniture Co., Limited, Durham, Ontario are building an addition to their plant. This addition will provide larger space for their stock room and take care of some new glue room equipment which is being added to their plant. In addition to this work on their new dry kilns is rapidly reaching completion. These kilns are said to be up to date in every respect, and will increase their drying capacity about 40 per cent.

E. C. Atkins & Company of Hamilton and Indianapolis have recently appointed Mr. John P. O'Connor manager of their Seattle branch. Mr. O'Connor has been connected with the E. C. Atkins Company at Seattle for a number of years and is favorably knows among saw users and saw buyers in Washington. The change of management was made necessary on account of the death of Mr. C. E. Hurlbert who had looked after the Atkins' interests in that Western State for many years.

The Chesterfield Furniture Company is the name of a new concern recently organized at Kitchener, Ontario. As the name indicates the output is to be confined to upholstered furniture, chiefly in the medium and better grades. This company was organized by E. W. Voelker, formerly manager of the De Luxe Upholstering Company, Limited, Kitchener, who has associated with him C. W. Voelker, and Alf. Gilham. Space has been secured in the Bohmer Block and it is expected that the factory will be in full operation by the end of September. Mr. Voelker is of the opinion that not only is there room in the upholstering field for an ndustry such as he has organized, but that conditions are on the mend and that the demand for furniture promises to be extremely good during the next few years.

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American Bronze Bearing Two Spindle.
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Yates 12" No. 108 Four Side.
American 10" No. 26 Four Side.
Cowan 12" M-152 Four Side..
Cowan 10" M-152 Four Side.
American 8" No. 505 Four Side.
Yates C-4 8" Four Side.

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34" American Band Saw.
28" Post Band Saw.
American Double Arbor Universal.
Ballantine Self-feed Rip Saw.
American Swing Saws.
American No. 4 40" Band Resaw.
American Scroll (Jig) Saw.
American No. 25 Edging Saw.
Mershon No. 1 Band Rip Saw.
Mereen-Johnson Box Rip Saws.
Mereen-Johnson Box Cut-off Saws.
Yates No. 229 Double Cut-off Saw.
Mercen-Johnson Cleat Saws.
Mereen-Johnson No. 145 Horizontal Band Resaw.
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2 Nichols 16 plate re-driers, plates 36" x 60 complete.
1 48" Glue Spreader.
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For further particulars apply Box 160, Canadian Woodworker, Toronto. 8-9

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1—Buzz Planer.
2—Wiring Machines.
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Write For Particulars

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Engine Wanted

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All guaranteed in A1 condition. One extra heavy Defiance bender, one 8' Preston steam retort (new), one Goldie & McCulloch double spindle shaper, one McGregor Gourlay double spindle shaper. SOUTHAMPTON PLYWOOD WORKS LIMITED, SOUTHAMPTON, ONT. 6.-9.

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Some factories make a profit but should make more. Other factories lose money yet should be making a profit. I have been making practical surveys of Furniture factories for 20 years. Have had free access to hundreds of factories and know what makes some successful and others failures. Have also built and managed factories. If interested—address Box 163 care Canadian Woodworker, Toronto. 8-11

Locating a Caisson

In rebuilding the foundations of a bridge in Nebraska, it was necessary to find the exact position of an old caission, which, according to Electric Traction, had a taper and was 80 ft. to bed rock. A pile driver was set up close to the caisson and a 4 in. pipe was driven vertically. A wire was welded to one end of the pipe, and the other was connected to a 6-volt storage battery, which in turn was connected to the steel side of the old caisson through a 150-ampere D|C. ammeter. While the pipe was beng driven the ammeter read from 8 to 10 amperes, but as soon as the pipe touched the steel caisson the ammeter showed 92 amperes. Then from the length of the pipe driven below ground and the horizontal distance from the pipe to the caisson at the surface of the ground, the exact slope of the caisson was found. A second pipe was then driven a short distance from the first, and the results checked within 2 in. or 3 in. In this way it was found that the new bridge pier had to be set 2 ft. 3 in. farther away in orded to clear the old caisson.

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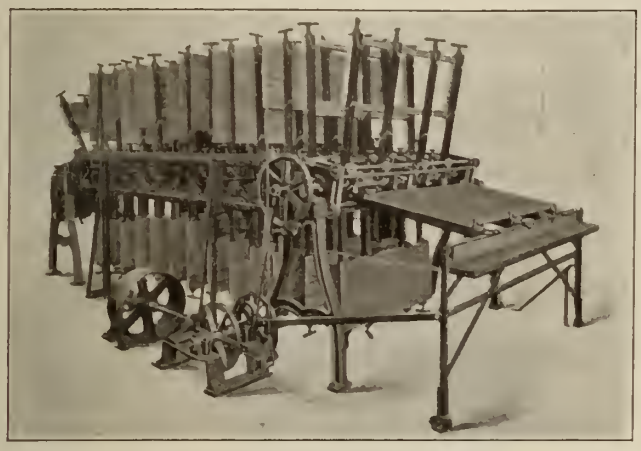

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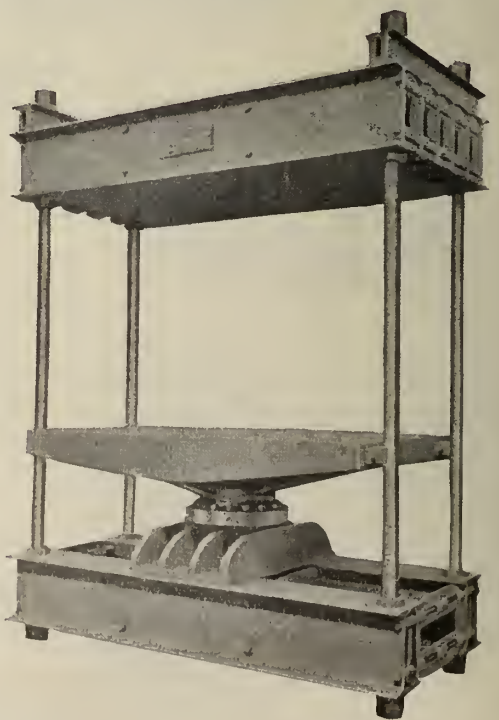

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The reliability and efficiency of Hoosier Rip Saws are known to woodworkers everywhere. They are made in the best possible manner.

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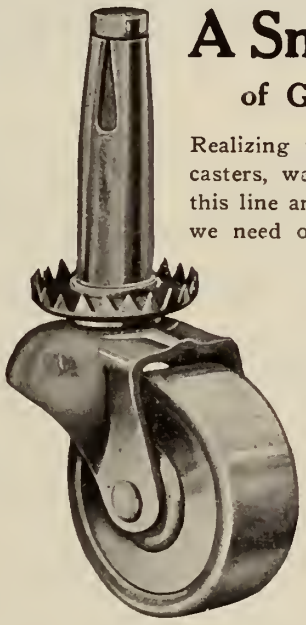

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Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

EXHAUST HEADS
Sturtevant, B. F. & Co., Galt, Ont.

EXHAUST SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

FEED ROLLS
Atkins & Co., E. C. Hamilton, Ont.

FIBRE PRODUCTS
Carter, E. T. Toronto, Ont.
Walter, John & Sons Limited, Kitchener, Ont

FIR DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

FIRE ALARM SYSTEMS
Northern Electric Co., Montreal, Que.

The Plant of Hillerich & Bradsby Co., Louisville, Ky.

The Score is Tie—Two Men On and a Louisville Slugger Smacks the Leather—

FROM the days of Pete Browning, Pop Anson and the Delehantys, those fence breakers of long ago, to this, the hour of Williams, Ruth and Hornsby, the old reliable Louisville Slugger Bat has been the tool of the hitters of history.

These famous bats of selected, clear-grained, long-seasoned ash made by men, many of whom have spent a generation at their work, are sanded with Carborundum Brand Garnet Paper and Cloth.

Finish is so important that the painstaking men at the Hillerich & Bradsby Co. plant have learned to depend on Carborundum Brand Garnet Products because they know of their quick, clean, cutting—their absolute uniformity—their ability to stand up to the job.

It doesn't matter whether the work is sanding baseball bats or high-grade furniture—it is proved time and again that

Carborundum Brand Garnet Products
Make Good Sanders Better Sanders

The Carborundum Company
Niagara Falls, N. Y., U. S. A.

New York, Chicago, Boston, Philadelphia, Cleveland, Detroit, Cincinnati, Pittsburgh, Grand Rapids, Milwaukee

Canadian Woodworker" Buyers' Directory—Continued

FIRE PREVENTION APPARATUS
Bennett & Wright Co., Toronto, Ont.

FIRE EXTINGUISHERS
Pyrene Mfg. Co., Toronto, Ont.

FIRE INSURANCE
Canadian Appraisal Co. Ltd., Montreal, Que.

FLOORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FRICTION CLUTCHES
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N. Y.
Herman Behr & Co., Inc., Brooklyn, N.Y.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).
Canada Glue Co., Brantford, Ont.

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GLUE
Canada Glue Co., Brantford, Ont.
Canadian Wood Cement Co., Montreal, Que.
Casein Manufacturing Co., New York City
Dunn Co., of Canada, Thomas W. Montreal
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.
Sanderson Pearcy & Co., Toronto, Ont.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

GLUE HEATERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE JOINTERS
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Simonds Canada Saw Co., Montreal, P.Q.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GROOVERS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Mattison Machine Works, Rochford, Ill.

GUM LUMBER
Hyde Lumber Company, South Bend, Ind.
Kirby Bonner Lumber Co., Houston, Texas
Mercean-Hawkins Tie Co., Huntington, W. Va.
Sondheimer Co., E., Sondheimer, La.
South Texas Lumber Co., Houston, Texas
Toronto Hardwood Lumber Co., Toronto, Ont.

HAND SCREWS
Fay & Egan Co., J. A. Cincinnati. Ohio.
Superior Hand Saw and Clamp Co., Grand Rapids, Mich.

HANGERS
Bond Engineering Works, Toronto, Ont.
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont

HANDLE & SPOKE MACHINERY
Fay & Egan Co., J. A. Cincinnati. Ohio.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Nash, J. M., Milwaukee, Wis.

HARDWARE
Larsen & Shaw Ltd., Walkerton, Ont.

HARDWOOD LUMBER

American Plywood Corp., New London, Wis.
Anderson, Shreiner & Mawson, Toronto, Ont.
Atlantic Lumber Company, Toronto, Ont.
Bedna Young Lumber Co., Jackson, Tenn.
Banning, Leland G., Cincinnati, Ohio.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Canadian General Lumber Co., Toronto, Ont.
Des Moines Sawmill Co., Des Moines, Iowa
Hyde Lumber Co., Memphis, Tenn.
Heeney, Percy E. Kitchener, Ont.
Kirby Bonner Lumber Co., Houston, Texas
Kneeland-Bigelow Co., Bay City, Mich.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Louisville Point Lumber Co., Louisville, Ky.
Long-Bell Lumber Co., Kansas City, Mo.
McDonagh Lumber Co., Toronto, Ont.
Luehrman Hardwood Lbr. Co., St. Louis, Mo.
Mercereau-Hawkins Tie Co., Huntington, W. Va
Mississippi Hardwood Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Oliver Lumber Co., Toronto, Ont.
Otis Mfg. Co., New Orleans, La.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Ritter Lumber Co., W. M. Columbus, Ohio.
Sondheimer Co., E., Sondheimer, La.
Stack Lumber Co., Escanaba, Mich.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Stimson & Co., J. V., Owensboro, Ky.
Terry-Nicholson-Cates Ltd., Toronto, Ont.
Toronto Hardwood Lumber Co., Toronto, Ont.
Wood Mosaic Co., Louisville, Ky.
Willey Co., C. L. Chicago, Ill.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HARDWOOD LUMBER (Kiln Dried)
Rathbone, Geo. Ltd., Toronto, Ont.

HARDWOOD FLOORING
Eaton & Sons J. R. Orillia, Ont.

HEATING SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

HOISTING EQUIPMENT
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

JOINTERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Hay Knife Co., Peter, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shimer Cutter Head Co., of Can. Ltd., Galt.
Simonds Canada Saw Co., Montreal, P.Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNOBS
Waddell Mfg Co., Grand Rapids, Mich.

LACQUERS
Cosmos Chemical Co., Port Hope, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sanducky, Ohio.
Mattison Machine Works, Rochford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

LEGS
Klise Manufacturing Co., Grand Rapids, Mich.

MAHOGANY
Otis Mfg. Co., New Orleans, La.
Toronto Hardwood Lumber Co., Toronto, Ont.

MACHINE KNIVES
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

METHYLATED SPIRITS
Canadian Industrial Alcohol Co., Montreal

MAGNOLIA
South Texas Lumber Co., Houston, Texas

MILL PIPING
Toronto Blower Co., Toronto, Ont.

MITRE SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS
Sturtevant, B. F. & Co., Galt, Ont.

MOTORS
Lancashire Dynamo & Motor Co., Toronto,
Northern Electric Co., Montreal, Que.
Sturtevant, B. F. & Co., Galt, Ont.

MOTOR PULLEYS
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati. Ohio.
Nash, J. M., Milwaukee, Wis.

NAILING MACHINES
Yates Machine Co., P. B., Hamilton, Ont.

OAK FLOORING
Rathbone, Geo. Ltd., Toronto, Ont.

PAINT
Marietta Paint & Color Co., Marietta, Ohio.
Sanderson Pearcy & Co., Toronto, Ont.

PAINT DRYERS
Sanderson Pearcy & Co., Toronto, Ont.

PAINT SPRAYING EQUIPMENT
DeVilbiss Mfg. Co., Toledo, Ohio

PANELS
Hay & Co., Woodstock, Ont.
Pannill Door Co. Ltd., Toronto, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

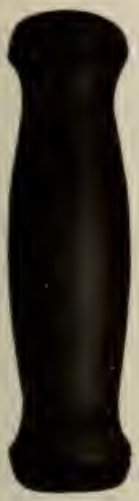
PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PATTERN PINE
Rathbone, Geo. Ltd., Toronto, Ont.

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Hardwood Dowels

Plain, Straight and Spiral Grooved



"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

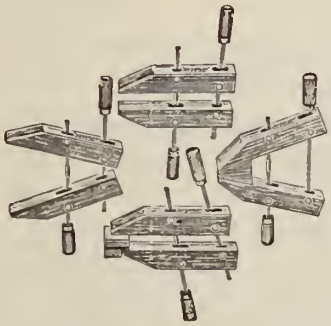
We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co.
LIMITED
Orillia, Ontario
Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

The "JORGENSEN"

Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws



The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."

"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

Manufactured only by the

Adjustable Clamp Company
216 N. Jefferson St., Chicago, U.S.A.

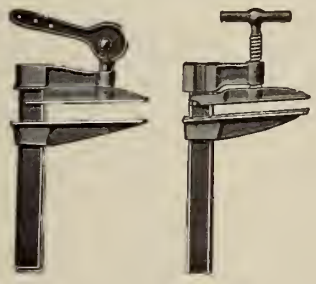
For Sale By

Aikenhead Hardware Limited .....Toronto
Lewis Bros., Limited .....Montreal

Colt's Clamps

for the

Woodworker

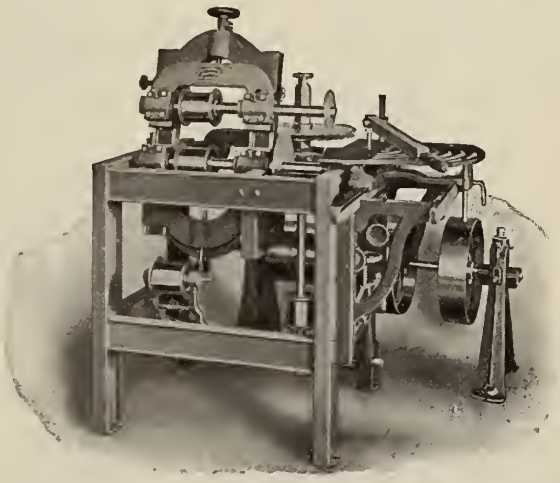


Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.
235 Centre St. BATAVIA, N. Y.



No. 20 Large Saw Tenoner

The finest machine made for all jointing and halving in wood shops and for automobile and carriage woodwork. Also gives a nice smooth tenon on door, window, sash, furniture and all kinds of cabinet work. Is used for halving and jointing stock a any angle.

Tenoners are equipped with flexible coupling for direct motor drive or countershaft.

Also made in No. 19 Small Saw Tenoner.

No. 19 Small Saw Tenoner.
No. 20 Large Saw Tenoner.
No. 21 Regular Bevel Saw.
No. 22 Large Bevel Saw.
No. 23 8½ Irregular Dresser.
No. 24 6" Irregular Dresser.
We also manufacture metal working machines.

Write for catalogue

Pettingell Machine Co.
Amesbury, Mass

Mention Canadian Woodworker

"Canadian Woodworker" Buyers' Directory—Continued

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
General Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Toronto Blower Co., Toronto, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Preston, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corp., New London, Wis.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

POWER APPARATUS
Northern Electric Co., Montreal, Que.

POWER & LIGHT PLANTS
Fischman Spring Co., Kitchener, Ont.

POWER TRANSMISSION MACHINERY
Bond Engineering Works, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PRESSES (Veneer)
Bond Engineering Works, Toronto, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin, Wm. R. Toronto, Ont.

PULLEYS
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PUMPS—Condensation and Return
Canadian Blower & Forge Co., Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

RATTANS
Carter, E. T., Toronto, Ont.

REEDS
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RETORTS
Perfection Wood Steaming Retort Co.,

REVERSIBLE PLANING MILL FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FELLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd.. Kitchener, Ont.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SANDPAPER
Behr & Co.. Herman, Brooklyn, N. Y.
Canada Glue Co., Brantford, Ont.
Carborundum Co., Niagara Falls, N.Y.
Sanderson Pearcy & Co., Toronto, Ont.

SASH DIMENSION
Pannill Door Co., Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW SHARPENERS
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
General Machinery Co., Toronto, Ont.
Cowan & Company, Galt, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

SHAFTING
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.
Bond Engineering Works, Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co.. Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

SHELLAC
Marietta Paint & Color Co., Marietta, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

SINGLE SPINDLE BORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co.. Toronto, Ont.

SOFTWOODS
Big Bear Lumber Co., Toronto, Ont.
Canadian General Lumber Co., Toronto, Ont.
Rathbone, Geo., Limited, Toronto, Ont.
Heeney, Percy E. Kitchener, Ont.
Luehrman Hardwood Lumber Co. Chas, F., St. Louis, Mo.
Terry-Nicholson-Cates Ltd., Toronto, Ont.

SPRINGS
Ideal Fence & Spring Co., Windsor Ont.

SPRING MATTRESSES
Fischman Spring Co., Kitchener, Ont.

SPRING CONSTRUCTION
Fischman Spring Co., Kitchener, Ont.

SPROCKETS
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

SPRUCE DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM & OIL SEPARATORS AND REFINERS
Smart-Turner Machine Co., Hamilton, Ont.

STEEL BALLS
Canadian SKF Co., Toronto, Ont.

STEEL PLATE PLANING MILL EXHAUST
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

STEEL PRESSURE BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE RIMS
Bruce Woodworkers Limited, Chesley, Ont.

TABLE SLIDES
Bruce Woodworkers Limited, Chesley, Ont.
Watertown Table Slide Co., Watertown, Wis.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

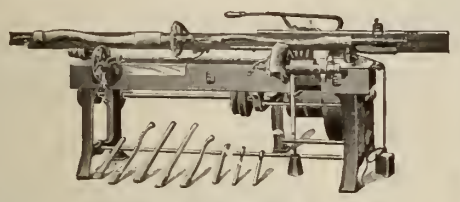
TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Pettingell Machine Co., Amesbury, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Klotz Machine Co's
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

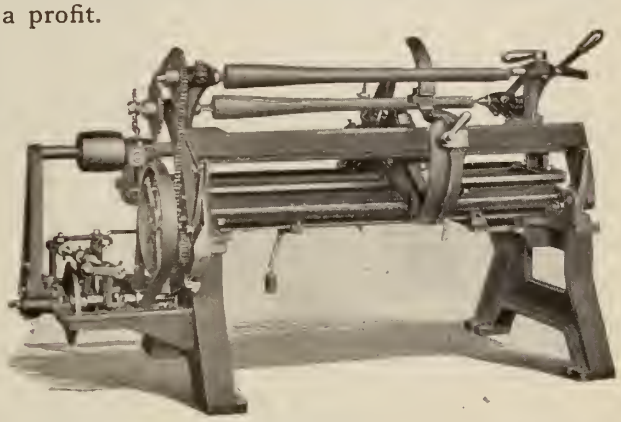
MANUFACTURED BY

Klotz Machine Co., Sandusky, O., U. S. A.

Write for descriptive circulars and prices.

MAKE MORE MONEY

from your timber by working it into handles and other turned work. Short and crooked logs, small trees, and other waste material can be worked at a profit.



OBER machines will help you.
We build Turning Lathes, Sanders, Rip Saws, Bolters, Boring and Chucking machines, etc.

SIMPLE, STRONG, DURABLE

Write for free catalogue No. 31.

The Ober Mfg. Co.

Chagrin Falls, O., U.S.A.

If It's a Chair Machine It's a McKnight

We have recently purchased patents and patent rights for the saddle seat scooping machine from the Sheboygan Machine Company of Sheboygan, Wisconsin.

Combined with patents of our own, we now control the overhead knife and cam action used in cutting saddle seats.

This puts us in a position to furnish either a SHEBOYGAN or McKNIGHT machine or parts of either.

L. G. McKnight & Son Co.

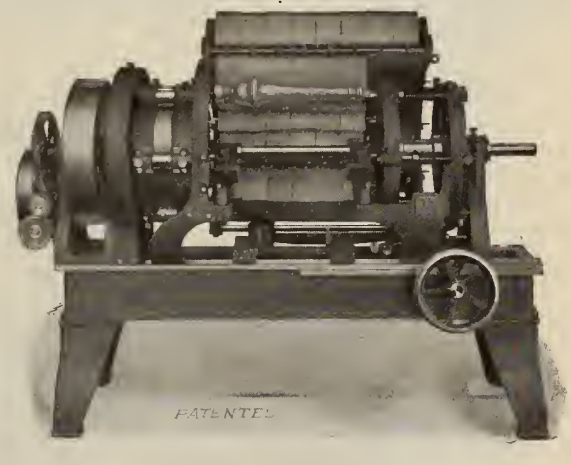
Manufacturers of Patented

Chair Making—Chair Bending, Wood Working Machinery

Catalog and Cuts upon Request

GARDNER, MASS., U.S.A

Are You Satisfied



with the sanding of your furniture turnings?

Unless you have a NASH SANDER you are not getting the best possible results either in quantity or quality.

Ask for my demonstration and trial proposition.

J. M. NASH, Milwaukee, Wis.

"Canadian Woodworker" Buyers' Directory—Continued

TRUCKS
National Dry Kiln Co., Indianapolis, Ind.

TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

TURNED WOOD GOODS
Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TURPENTINE
Carter, E. T., Toronto, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

TWIST WORK
Klise Manufacturing Co., Grand Rapids, Mich.

TWISTING AND FLUTING MACHINES
Shawver Co., Springfield, Ohio

UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

VACUUM PUMPS
Canadian Blower & Forge Co., Kitchener, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

VARNISH
Marietta Paint & Color Co., Marietta, Ohio
Sanderson Percy & Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Acme Veneer & Lumber Co., Cincinnati, O.
American Plywood Corp., New London, Wis.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Hartzell, Geo. W., Piqua, Ohio.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Nickey Bros., Memphis, Tenn.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER DRYERS
Nichols Company, A. S. New York, N.Y.

VENEER SAWS
Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin, William R. Ltd.
Preston Woodworking Machinery Company, Preston, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WALNUT LUMBER
Des Moines Sawmill Co., Des Moines, Iowa.
Hartzell, Geo. W. Piqua, O.
Kirby Bonner Lumber Co., Houston, Texas
Toronto Hardwood Lumber Co., Toronto, Ont.

WASTE
Carter, E. T., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Pettingell Machine Co., Amesbury, Mass.

WOOD STEAM RETORTS
Perfection Wood Steaming Retort Co., Parkersburg, W. .Va
Shawver Co., Springfield, Ohio

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.

Speed + Perfect Joints = Low Costs

The Taylor TRADE MARK

CLAMP CARRIER
for
Small Jobs in the Big Plant
All Jobs in the Little Plant

1. Natural standing position of operator.
2. No Juggling of heavy clamps.
3. No bending or walking.
4. No pile to overturn to get work glued first—simply move clamp one section.
5. Less space than equal number of clamps with work in, piled on the floor.

Any size to suit your work. 8 and 12-section wheel type. 16, 20, 30 and 40-section chain type. 4, 5 or 6 clamps per section for stock up to 42-in. wide.

Representatives:
A. R. Williams Machinery Co., Toronto. Canada

James L. Taylor Mfg. Company
Poughkeepsie, N.Y., U.S.A.

KILN-DRIED HARDWOODS

1/8 Veneer for Doors.
1/4 Sawn Red Gum
Plain Red Oak
1/4 Cut White Oak
1/2" Lumber
Mahogany 10-12
1/4 Cut W. Oak, 6-9
Plain Red Oak, 10-13 wide
5/8 Whitewood for panels
4/4 & 6/4 FAS Walnut
4/4, 6/4, 8/4" Fas Mahogany
4/4, 6/4, 1/4 Cut W. Oak
4/4, 6/4, 8/4, 12/4, Pl. W. Oak
4/4, 6/4, 8/4, 12/4, Whitewood
4/4, Aromatic Cedar.

DOOR PANELS

3000 Fir
300 Birch
250 1/4 Cut W. Oak
350 Plain Red Oak
325 Chestnut
300 Red Gum
1/8 & 1/4 Lamatco

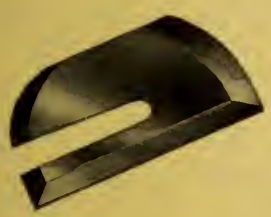
CLEAR PINE

4/4, 6/4, 8/4, 10/4, 12/4
California White
6/4 & 8/4
California Sugar
4/4, 5/4, 6/4, 8/4, 12/4
Western White
4/4, 6/4, Chestnut
4/4, 6/4, 1/4 Sawn Red Gum
4/4, 1/4, Sawn Fig. Gum
4/4, 6/4, Sap Gum
4/4, 6/4, 8/4, Cypress
4/4 Tupelo
4/4 Black Ash

Let us quote you on any good lumber you require.

George Rathbone Ltd.

Northcote Ave., Toronto



ATKINS

STERLING QUALITY

SAWS and KNIVES ECONOMIZE

ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing

Atkins Sterling Quality Saws

and Machine Knives

Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.

Write to-day for our Knife Booklet "C.W." and Pattern Template Poper.

E.C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

Here's what the Ottawa Furniture Co., Holland, Mich., say: "We wish to express our entire satisfaction with the Mattison No. 124 Automatic Stroke Belt Sander, purchased from you a few years ago. We have had no occasion to make any complaint on any parts or any work done on this machine. Moreover we find that we can get very much more work done with this machine than was possible with any of the former stroke sanders we have used. The work, too, is as nearly perfect as can be had. We are glad to recommend this machine to any prospective buyer.

For a Perfect Finish on Flat Work at High Speed

THIS Mattison No. 124 Sander affords an unsurpassable combination of features for perfect sanding and exceptionally large output. All the fine features of hand sanding are retained with a speed that satisfies modern production demands. The power stroke arrangement not only saves the operator's strength in handling flat surfaces of large area, but obtains infinitely greater speed.

The instant change from power to hand stroke, for the purpose of spot sanding, when required, enables the operator to completely finish the work **with the machine**, thus quality is not sacrificed for speed.

The mechanical efficiency of the No. 124 assures long-continued service. Its heavy construction furnishes a solid foundation for the working parts. The double end drive with take-up devices gives a smooth stroke reverse and eliminates lost motion at end of stroke. A tempered steel-band in place of the troublesome stranded wire cable, carries the universally flexible sliding shoe.

If you are interested in the perfect sanding of your flat work at high speed, let us tell you more about the 124. Write for descriptive bulletin.

MATTISON
MACHINE WORKS
Rockford, Illinois, U. S. A.

Volume-Twenty Three TORONTO, OCTOBER, 1923 Number Ten

CANADIAN WOODWORKER and Furniture Manufacturer

POWER FEED RIP SAW 280

Ball or Babbitt Bearings

Capacity 6″ Thick, 15″ to 21″ between Fence and Saw, Variable Feed 0 to 200 Feet and Reverse

Table 58″ x 44″, counterbalanced and adjusts 3″ by screw and hand wheel, Feed Spur and Delivery Roll raise to pass 6″ stock, adjust for short or long stock and swing out of the way for hand feeding.

Arbor 1-15/16″; Pulley 8″ x 8″; Collars for spacing saws ¼″ to 6″ apart.

COWAN & COMPANY OF GALT LIMITED

GALT, ONTARIO, CANADA

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WHY ACCEPT LESS—

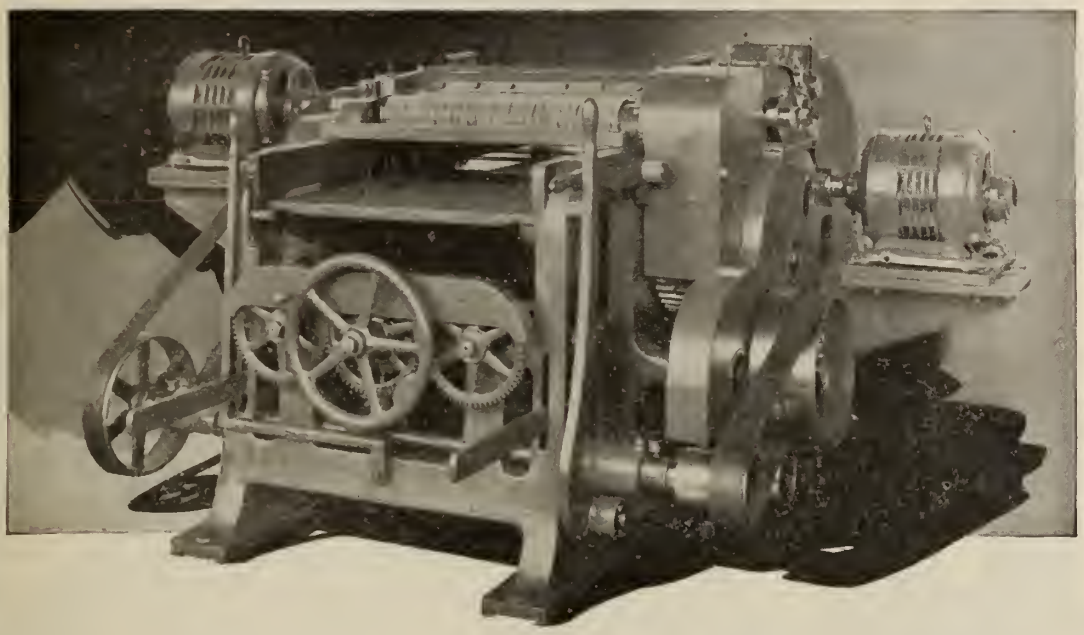
This Company produces every authorized grade of Industrial Alcohol. Sales are made with a clear recognition on our part that our obligation commences—instead of ending—when sales are made, and that our responsibility is only discharged when our product has achieved successfully for you the purpose for which it was sold and for which it was bought.

In addition, our staff is available for advice and counsel on all matters that pertain to Industrial Alcohol—for we are known as Industrial Alcohol Headquarters for Canada.

Canadian Industrial Alcohol
Company, Limited
MONTREAL

Manufacturers of
MAPLE LEAF BRAND
Ethyl Alcohol-Cologne Spirits-Absolute Alcohol, B.P.
Methylated Spirits and Denatured Alcohol (all formulae)
Distributing Warehouses
Montreal-Toronto-Winnipeg-Vancouver-

SKF



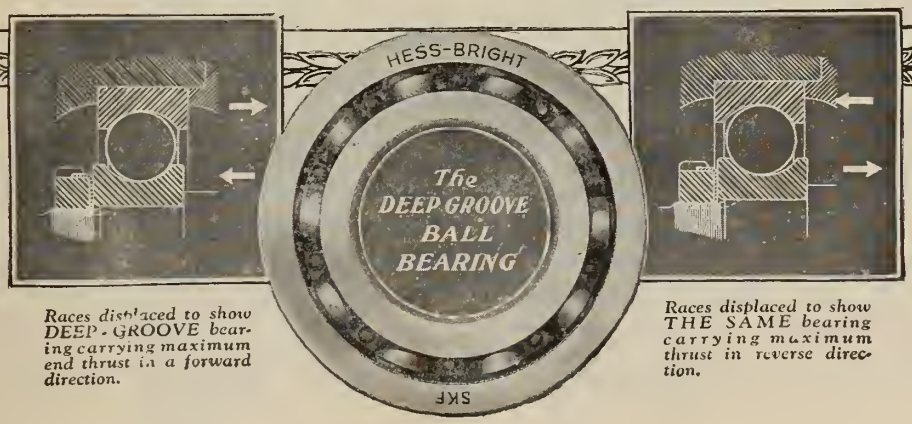
Deep-Groove Ball Bearings
Maintain Cutter-Spindle Settings

ACCURATE planing at high speed is largely a matter of maintaining the correct setting of cutter spindles. If bearings wear, poor workmanship results; if they bind and heat, production is retarded.

But supported on deep-groove ball bearings—properly installed and mounted—vibration is eliminated, the cutter spindles maintain their original setting indefinitely and the bearings show no appreciable wear through years of service. For ball bearings do not absorb power in destructive friction which necessitates frequent and expensive renewal of the linings of plain bearings.

To say that a good planer can be made better by equipping it with deep-groove ball bearings, as made by the Hess-Bright Manufacturing Company, is to state a fact established by experience.

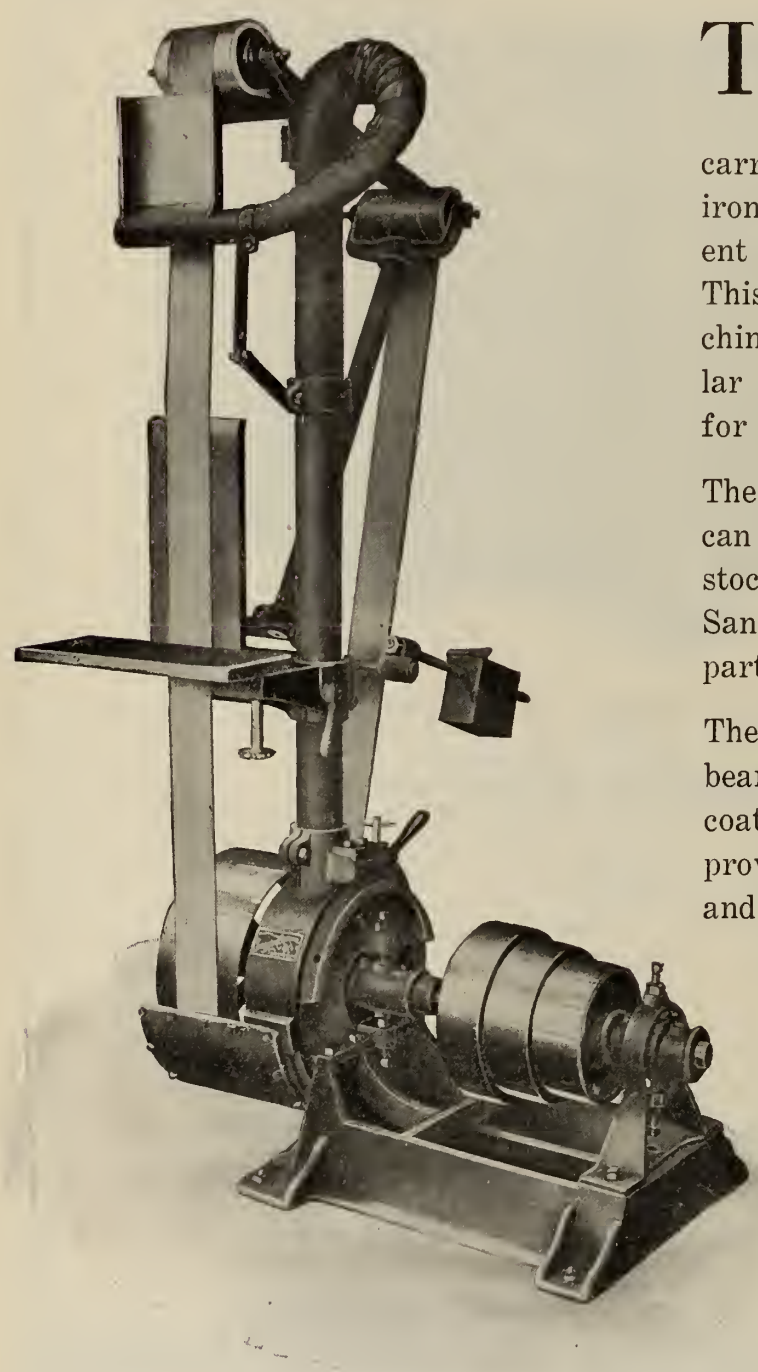
CANADIAN SKF COMPANY, LIMITED
TORONTO MONTREAL



Races displaced to show DEEP-GROOVE bearing carrying maximum end thrust in a forward direction.

Races displaced to show THE SAME bearing carrying maximum thrust in reverse direction.

A Versatile Machine for Smoothing Out Your Sanding Problems



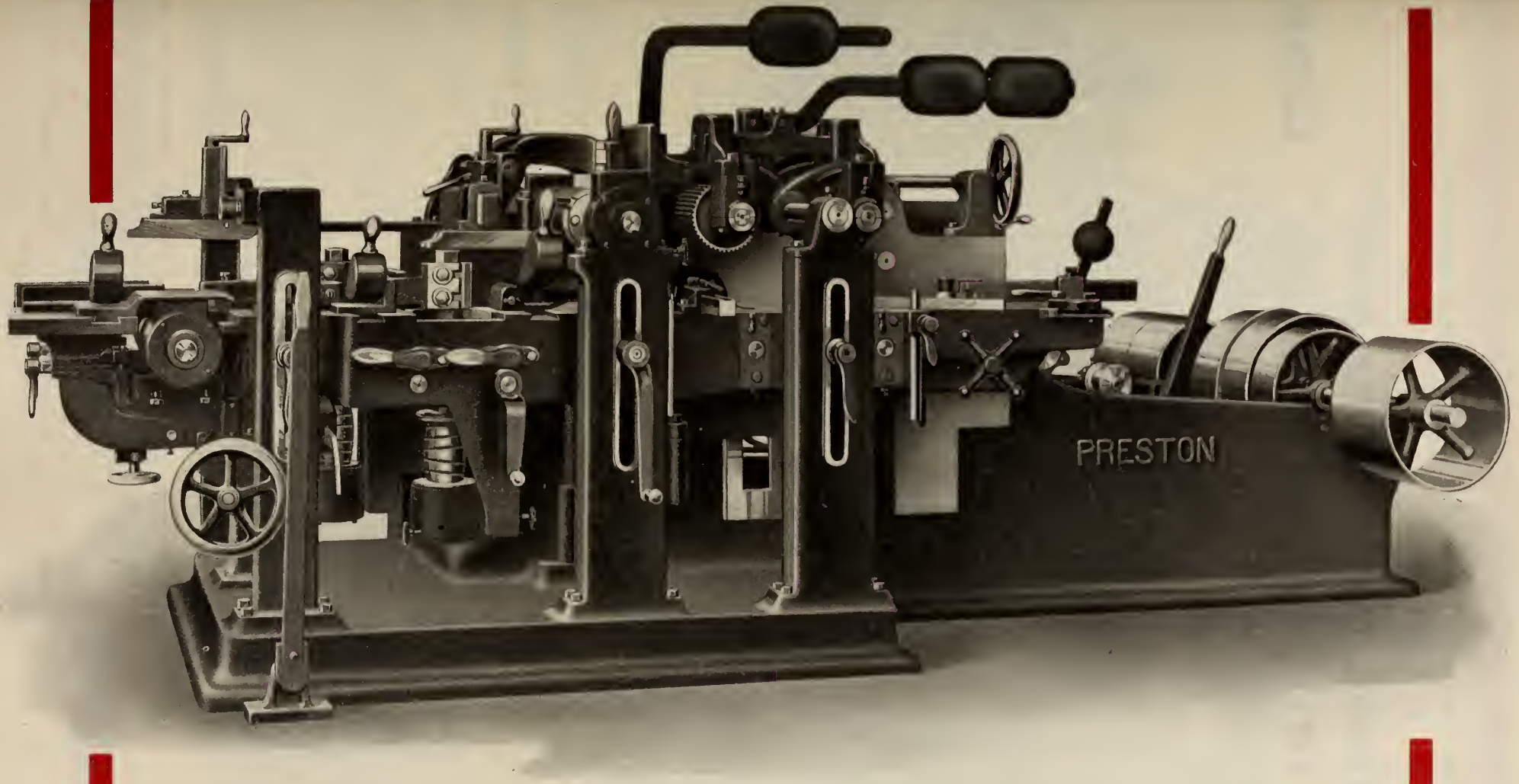
THIS Adjustable Variety Belt Sander is strongly constructed with a heavy broad floor base. The upright frame carrying the sand belt, turns on a large iron drum and can be adjusted to different positions and then securely locked. This permits the operator to use the machine in a Vertical, Horizontal or Angular position, whichever is most suitable for the work to be done.

The Table is made of hardwood strips and can be swung clear of the belt, allowing stock to be sanded lengthwise of the belt. Sand belts up to 8″ in width used with no part of it going to waste.

The Top Roll is equipped with SKF ball bearings and is covered with a heavy coating of rubber, vulcanized on the roll, providing an excellent driving surface and also a proper cushion for sanding.

Descriptive Circular sent on request.

JACKSON, COCHRANE & CO., KITCHENER, ONT.



FRONT VIEW

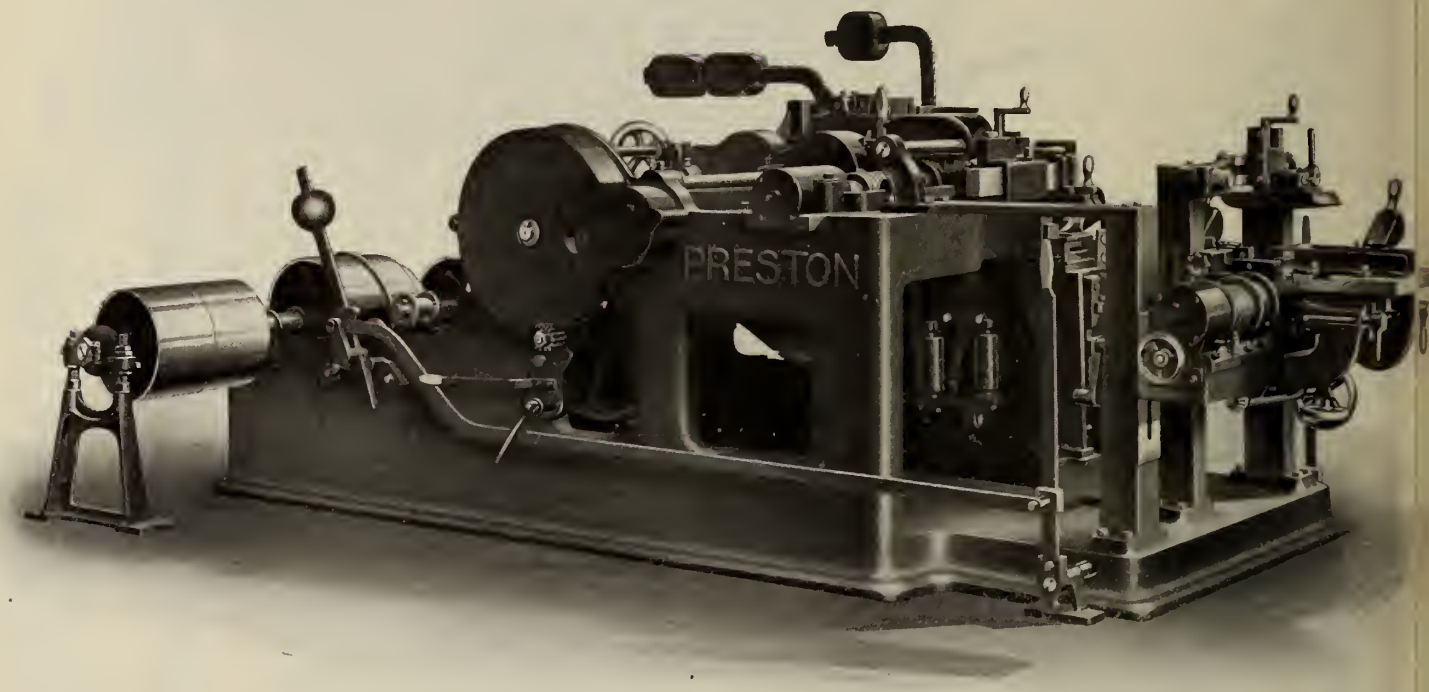
NO. 145 "PRESTON" HEAVY HIGH SPEED COMPLETELY BALL BEARING MOULDER

Ball Bearing Top, Bottom and Side Heads. Ball Bearing Countershaft. Ball Bearing Loose Pulley. All SKF Specially Selected Precision Ball Bearings

(Continued on the next page)

"Competition never bothers the firm that progresses first"

Here's Another "Winner" For the "Preston" Line

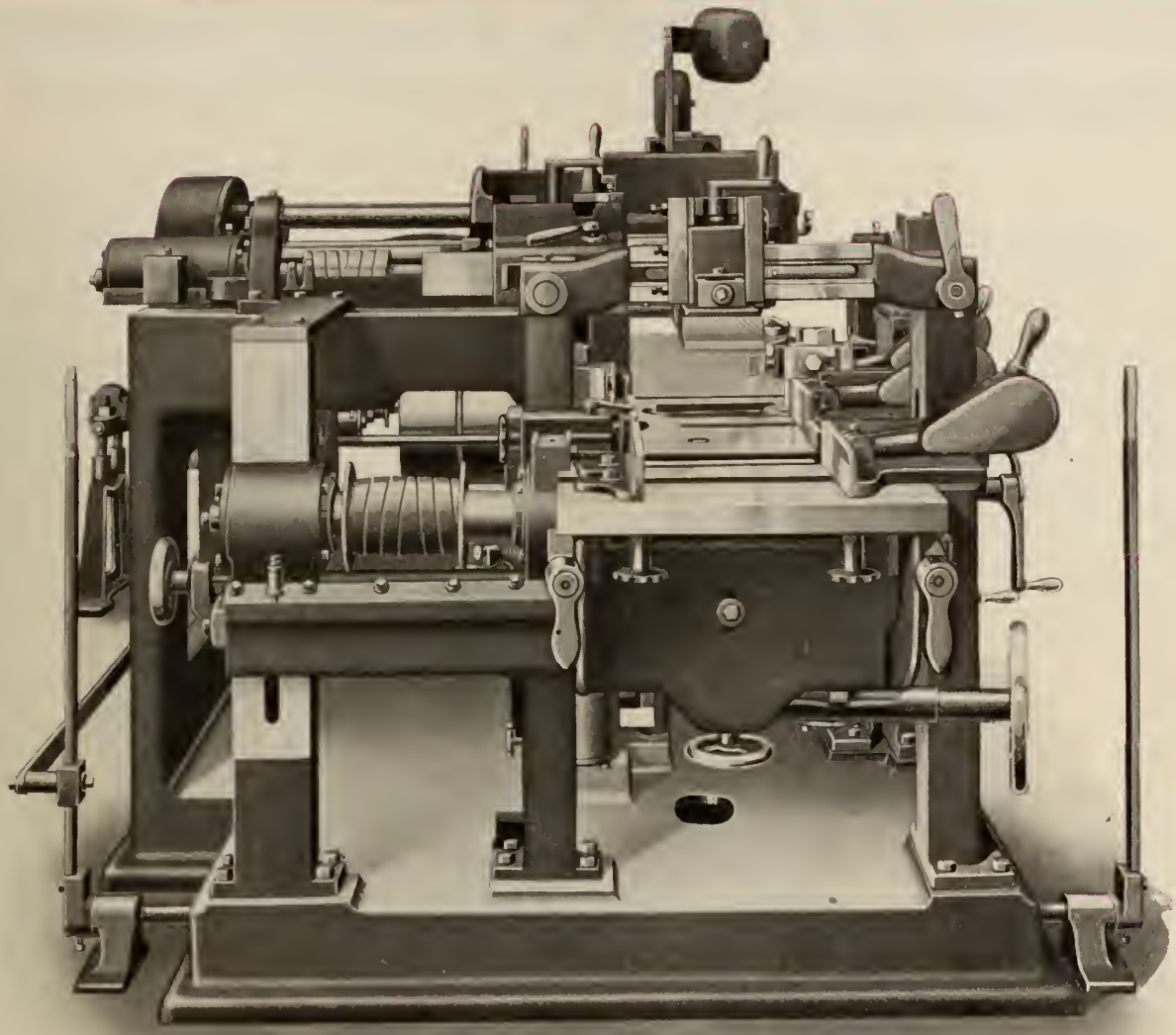


"PRESTON" HEAVY HIGH SPEED BALL BEARING MOULDER (Rear View)

with

1. Heads running 5,000 to 6,000 R.P.M.
2. Substantial weight properly distributed to guarantee smoothest running at this high speed.
3. All heads self centering, slip-on style—**absolutely the quickest known method of changing heads from one class of work to another.**
4. Round heads with four high speed thin knives.
   Or, square heads with two special high speed thick knives.
   Or, special combination head for three high speed thin knives and three slotted sides for moulding cutters. (Above either solid or slip-on style).
5. Top and bottom slip-on heads interchangeable.
6. Arranged for Stockbridge Electric Knife Grinder for grinding knives right in their place on the machine.
7. Hopper feed, if desired. **This will increase ordinary production at least 25%.**

THE PRESTON WOODWORKING
PRESTON



DELIVERY END OF "PRESTON" HIGH SPEED BALL BEARING MOULDER

In this Moulder, we have developed a machine that in performance and quality of production surpasses everything that has formerly been offered to the trade. The purchase of this machine guarantees you MUCH MORE PRODUCTION, IMMEASURABLY BETTER QUALITY OF WORK AND A GREAT SAVING IN ORDINARILY NECESSARY MACHINE AND HAND LABOR.

MACHINERY COMPANY LTD.
ONTARIO

(Continued on next page)

Here's what John B. Smith & Son of Toronto have to say of our machine—

Sept. 28/23

The Preston Woodworking Machinery Co.,
Preston, Ontario

Dears Sirs:

Just a line to let you know that we are very well pleased with the Moulder No. 145 which we bought from you some few months ago.

The work which we are able to turn out on this machine is simply fine. One of our best customers asked us to try and let him have all his mouldings run by this machine. May say that this particular customer turns out very fine work, and we think this is sufficient to show that the Moulder fills the bill.

Do not hesitate to refer any prospective purchaser to us, and we will be pleased to show them the machine.

JOHN B. SMITH & SONS LTD.
WJS/MC. (Sgd.) W. J. Smith.

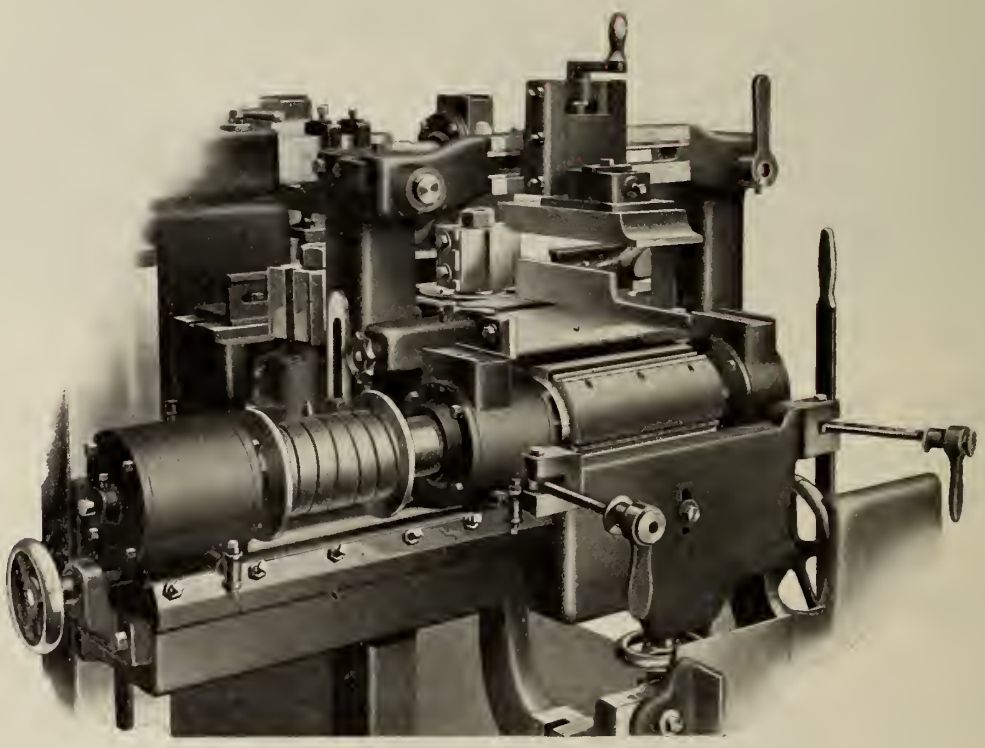
October 8/23

The Preston Woodworking Machinery Co.,
Preston, Ontario

Dear Sirs:

We are mailing by sample post a few pieces of moulding which we ran out on your machine recently. We run out considerable quantities of this material for this particular customer, and he has made a request that we fill all his orders from this machine. Thought this would interest you.

JOHN B. SMITH & SONS LTD.
WJS/MC. (Sgd.) W. J. Smith.



Close up view of Bottom Cylinder showing Round 4-Knife Head and Ball Bearing construction. Rear Table is dropped down out of way giving free access to Head

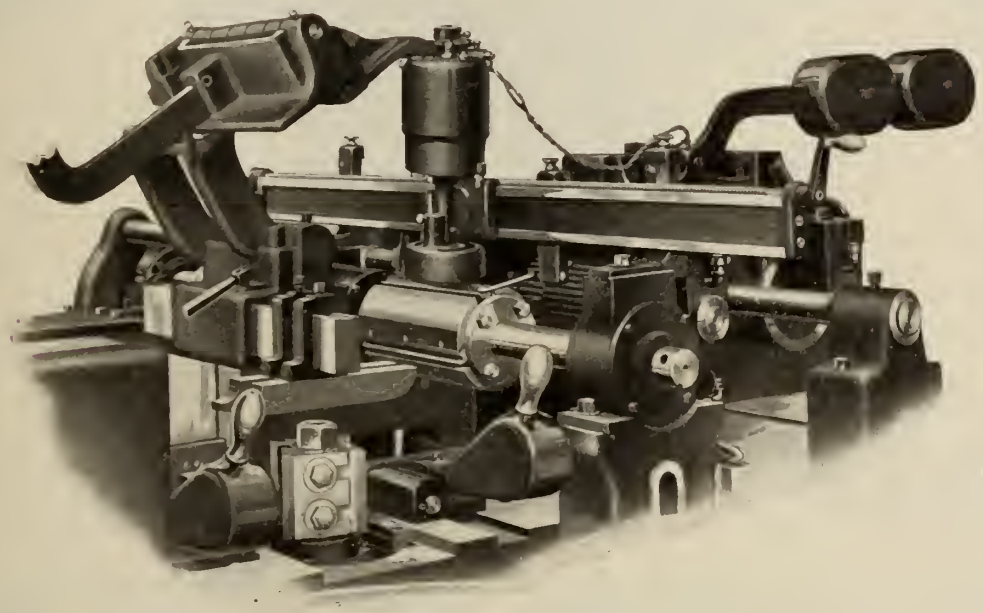
THE PRESTON WOODWORKING
PRESTON

George Rathbone, Ltd., Toronto have one of these Ball Bearing Moulders and this is what they say—

The Preston Woodworking Machinery Co., September 27, 1923
Preston, Ontario
Dear Sirs:

In regard to the 12" Ball Bearing sticker we have installed, we are very much pleased with the class of work it turns out. both hard and soft woods. As a Canadian product manufactured by Canadian workmen, we believe that this is the best Canadian machine that is on the market.

Yours very truly,
TER/HE GEORGE RATHBONE LIMITED



Close up view of Top Cylinder showing Round 4-Knife Head and Ball Bearing construction. Sectional Chipbreaker thrown back and Electric Knife Grinder in position for Grinding Knives perfectly true with one another

The Gibbard Furniture Company of Napanee say: "After two trips to the United States we decided to purchase your machine." Here is their letter—

The Preston Woodworking Machinery Co., September 4th, 1923
Preston, Ontario
Dear Sirs:

Your new High Speed Ball Bearing Moulder is now operating, and is doing such good work that practically all of our rough sanding is eliminated. We expected good work from this machine when we purchased it, and are not in the least disappointed.

When we went into the market for a machine of this kind, we thought we would have to go to the United States to get one that would do the very best work. Our Superintendent, Mr. Moffat, made a careful study of the different machines, and after two trips to the United States decided to purchase your machine. He is very enthusiastic about this, and we know it will help reduce our costs greatly.

We think this letter is coming to you because you have given us such good support in getting the different problems worked out so as to have our operator thoroughly understand its operation.

Yours very truly.
GWG/EH (Sgd.) G. W. GIBBARD,
Secretary Treasurer.

(Continued on next page)

MACHINERY COMPANY LTD.
ONTARIO

IN conclusion and as a further aid to our campaign for the more general use of ball bearings in woodworking machines the following editorial is reprinted from the April "Wood-Worker" of Indianapolis.

WOOD-WORKING MACHINERY

By ROGER MANNING

THE sales manager of a well-known machinery line said recently: "Ninety percent. of the wood-working machinery in use today is jarring itself to pieces at a rapid rate.

In most instances a machine is in continuous use. For this reason repairs and adjustments are often delayed. Sometimes a pulley is changed to get a higher speed, and the shaft or spindle begins to knock. Gradually the framework is so loosened that the entire machine is soon jarring itself to pieces faster than it can be repaired.

Consequently the wood-working machinery industry presents an opportunity for properly designed equipment. This has brought forth more substantial, worth-while improvements during the past year than in several preceding years. In practically all cases, machines can now be purchased with ball bearings, at a slight increase over babbitted bearings. One machinery manufacturer believes in the future of ball bearings to such an extent that he has agreed to furnish all his equipment with them, at no increase in price over babbitted bearings.

From a production and cost standpoint, the latest types of wood-working machines, with ball bearings and motor-drive, are very much to be desired. Once an operator becomes accustomed to the advantages of such equipment, especially if he is working on a rate basis, there is no danger of his leaving to go elsewhere to operate the old type of machine. In going from one plant to another in the same city, I have found instances of one machine doing over five times as much work as another, on the same operation. Surely this is a condition which cannot last indefinitely. In view of the progress made in the design of equipment, it is certain that the plant with obsolete machinery will have difficulty in showing annual profits.

The letters which have been reproduced expressing such satisfaction with our machine, coupled with the reputation we have gained for building only the highest class of woodworking machinery, should go a long way toward proving that this Preston Ball Bearing Moulder is the outstanding achievement of the day in the woodworking machinery line.

With this moulder FEWER MANUFACTURING OPERATIONS ARE REQUIRED, AN ALMOST PERFECT FINISH IS SECURED and MACHINE OR HAND SANDING COSTS ARE PRACTICALLY ELIMINATED.

Would you like to see this machine in actual operation on your own line of work? If so drop us a line.

"Pioneers in the manufacture of Ball Bearing Woodworking Machinery in Canada"

THE PRESTON WOODWORKING MACHINERY COMPANY, LTD.
PRESTON ONTARIO

AN ACCURATE, PRECISE EDGING AND RIPPING SAW

Yates G-2 installation is justified alone by the fact that it saves labor, to say nothing of its accurate and dependable qualities. Without solicitation, many users write letters about the fine capacity of this machine to cut labor costs.

One firm writes that their two G-2's are doing work formerly done by ten men on table saws. In a furniture factory where two G-2's are set in tandem, two men are doing the work of eight on older machines. Many other firms advise that the saving in labor over older methods ranges from 20 to 50 per cent.

Besides this great saving in labor, consider that Yates G-2 rips so straight and accurate that subsequent operations are unnecessary in a great many cases. Stock simply is run through the machine and then passed on for gluing.

P. B. Yates Machine Co. Ltd.
HAMILTON — ONTARIO
WORLD'S LARGEST MANUFACTURERS OF WOODWORKING MACHINERY

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A Worth-While Compressor

—a heavy, substantial machine, liberally proportioned, and accurately built. It is self-contained, and may be set on light foundations or strong floor.

Compact and Strong

This type is built both single and double cylinder, and develops pressures up to 125 pounds. Both the head and cylinders are water cooled; giving approximately 80% more cooling surface than in double-acting machines.

Unloading Governor may be set to operate at different pressures. The suction valves are automatically held open when desired pressure is obtained.

This illustrates our No. 225
SINGLE ACTING AIR COMPRESSOR

What type of air-compressor do you need? write us.

The Smart-Turner Machine Co., Ltd.
Hamilton Canada

The GRAND RAPIDS VAPOR KILN
contributes to BERKEY & GAY efficiency

Generally speaking the more representative woodworking and wood handling plants in the country are equipped not only with Grand Rapids Vapor Kilns, but with Grand Rapids Vapor Kiln instruments and equipment. Results are what these factories are after, and the results obtained from Grand Rapids Vapor Kiln installations and operation speak for themselves. That is why during the past year nearly 50 per cent. of our business came from "repeat" orders.

Send for our technical bulletins. They cover practically every phase of wood curing problems. Our engineering corps is at your command. Write, wire, phone, or call.

GRAND RAPIDS VAPOR KILN

Engineers, Manufacturers, Contractors Grand Rapids, Mich.

Represented on the Pacific Coast by E. F. Tindolph,
5539 White-Henry Stuart Building, Seattle, Wash.

Foreign Offices:

A. R. Williams Machinery Co.
St. Johns, N. B.

The Oliver Machinery Co.
Manchester, England

Hampe & Hartwig
Hamburg, Germany

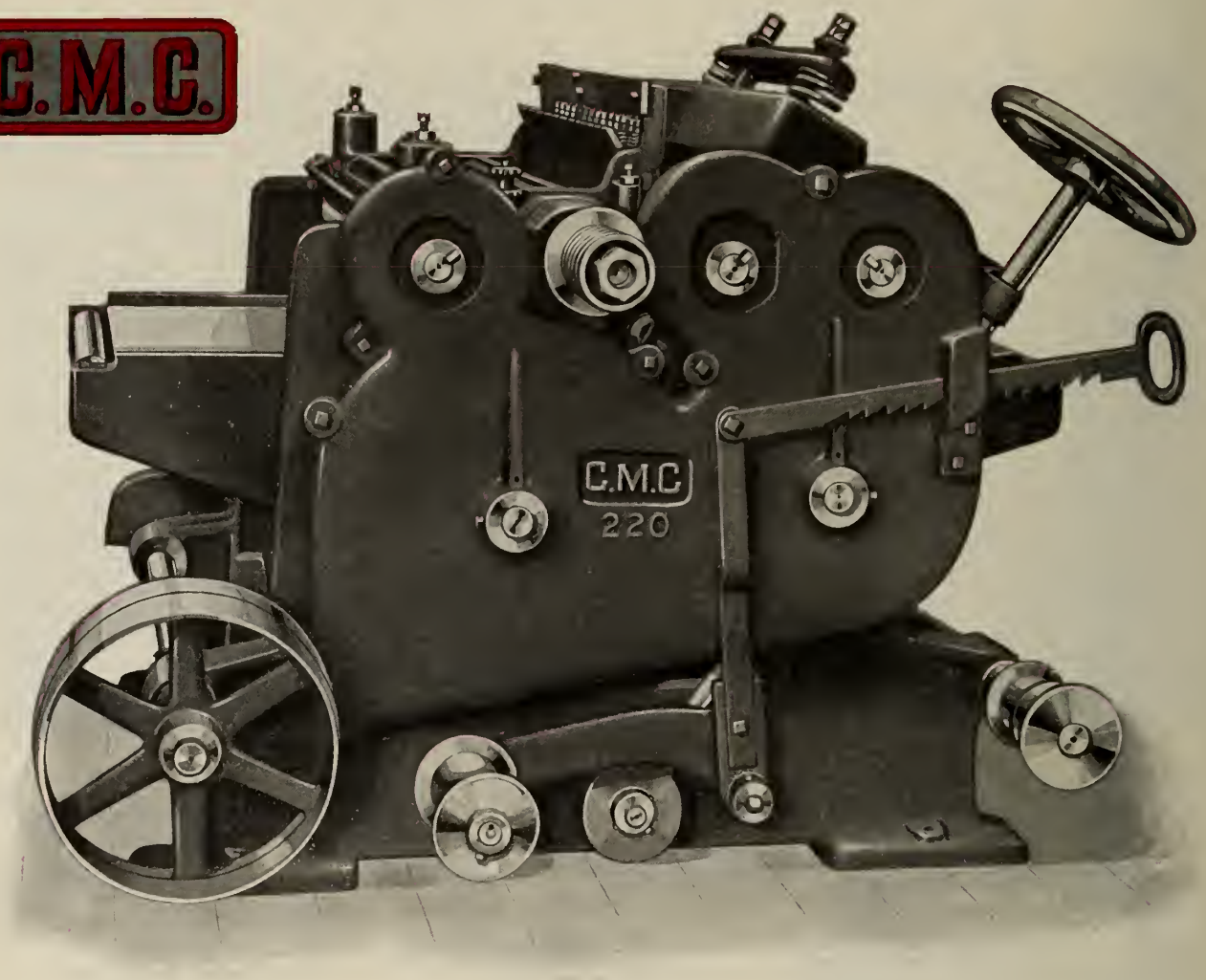
Take a tip from this Foremost Factory

The Berkey & Gay Furniture Company stands well to the front in the furniture industry—a fact quite generally recognized and admitted. The Grand Rapids Vapor Kiln equipment in this plant includes 16 kilns, the interiors of which are painted with a special acid and moisture-proof paint to protect the masonry. Included also are approximately 2,000 cross-pile kiln trucks, full requirements in transfer cars, and a full compliment of instruments which enable perfect lumber tests for uniform drying, etc. The Berkey & Gay plant is but one of hundreds finding satisfaction in Grand Rapids Vapor Kiln instruments and equipment.

No. 220 Single Surfacer

24″, 30″ or 36″ wide Babbitt or Ball Bearing

C.M.C.



Designed to do a very wide range of highest class surfacing on both hard and soft woods. Owing to the variety of ways and sizes in which it is built, it will be found to be the most universal Surfacer on the market, being adaptable to the requirements of any woodworking plant, from a 24″ machine with babbitt bearings for simple planing at moderate speeds to a 30″ or 36″ machine with ball bearings for fast cutting or fine smoothing.

CANADA MACHINERY

GALT,

"A Magnificent Machine in Every Way"

The tribute of one user. Name on request.

A Few Points Worth Noting

Great rigidity of frame is ensured by the use of heavy castings with cross rails of "L" section which gives wonderful table support.

This framing also prevents Planer being thrown out of line through settling of floors or rough usage in shipping.

Beneath the cylinder is a detachable plate which can be renewed when worn out of true.

Long narrow gibs give rigid support and square thread screws turning in ball bearings easy adjustment to the table.

Table elevating screws and nuts are easily accessible to the operator and may be adjusted or replaced without tearing down the machine.

Cylinders are made of crucible cast steel, hand forged, machined, ground perfectly true and given perfect running balance.

We would be pleased to refer you to a number of more than satisfied users of this Planer.

DRIVES

Machines are regularly supplied with countershaft for belt drive but are also furnished to order without countershaft for drive by belt from motor, or for direct motor drive to the cylinder through flexible coupling, motor being mounted on a suitable bracket bolted to the frame of the Planer as shown in the illustration adjoining.

A "220" Driven by Direct Connected Motor

Toronto Sales Office—721 Bank of Hamilton Building

Manufacturers of Wood and Iron Working Machine Tools

CORPORATION LIMITED

ONTARIO.

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The Ford Motor Co., with years of lumber kiln experience, has just purchased Cutler Kilns for its latest plant

In these kilns shown above, the matter of circulation is carried to its practical extreme giving doubled capacity and better quality than ever before obtained.

Handling over three times as much air as other kilns Cutler Kilns must dry faster.

All the latest mechanical improvements are embodied.

Let us show you how they easily pay their cost in a year.

Cutler Desk Company, Dept. B. - Buffalo, N. Y.

To Furniture, Body, Implement and other Canadian Woodworking Industries

Canadian Hardwood Manufacturers:

How often do you ship a stock of Hardwod on grade and wonder if your inspection will be right?

NATIONAL CERTIFICATE ATTACHED DOES AWAY WITH ANY WORRY.

Are you certain you are being paid for all First and Seconds in your stock?
NATIONAL INSPECTION GUARANTEES THIS.

Do you ever have arguments with your customers over grading?
NATIONAL INSPECTION WHERE MUTUALLY AGREED UPON IS FINAL BETWEEN BUYER AND SELLER.

Canadian Wholesalers:

Ask the man who ships under NATIONAL INSPECTION what he knows of the Inspection Service in Canada. Ontario Market—Four Inspectors under the capable management of Mr. Jack Cadenhead; Montreal Market—Three Inspectors under another capable man, Mr. H. L. Hebard.

Canadian Furniture, Automobile Carriage, Implement and other Woodworking Industries:

Do you know that you can now enjoy the full benefits of the NATIONAL HARDWOOD INSPECTION SERVICE.

At the twenty-sixth Annual Convention of the Association held in Chicago, June 13th, 14th and 15th, 1923, a measure was introduced and unanimously adopted authorizing the admission to associate membership of any individual, firm or corporation in good standing engaged in the fabrication of hardwood lumber into manufactured products. It was further provided that no initiation fee should be charged for associate membership and that dues for such membership should be $50.00 per annum. Furthermore, that the relationship of associate members should in no wise alter existing rules and regulations of the Inspection Department applying to and between active members of the Association and that associate members can receive official inspection service on the payment of the same fees and expense as active members.

Do you ever think what the effect of the NATIONAL HARDWOOD ASSOCIATION EMBLEM on the top of your purchase orders will have on the shipper. It is your GUARANTEE that you will get the exact grades which you order. W. F. Oliver of the Oliver Lumber Co., Ltd., Toronto, Director of the Association for Canada will be glad to talk the matter of your membership over with you further. Drop him a line and he will make a point of seeing you, or write the Head Office direct for more information.

The National Hardwood Lumber Association

1864 McCormick Building **CHICAGO, ILLINOIS**

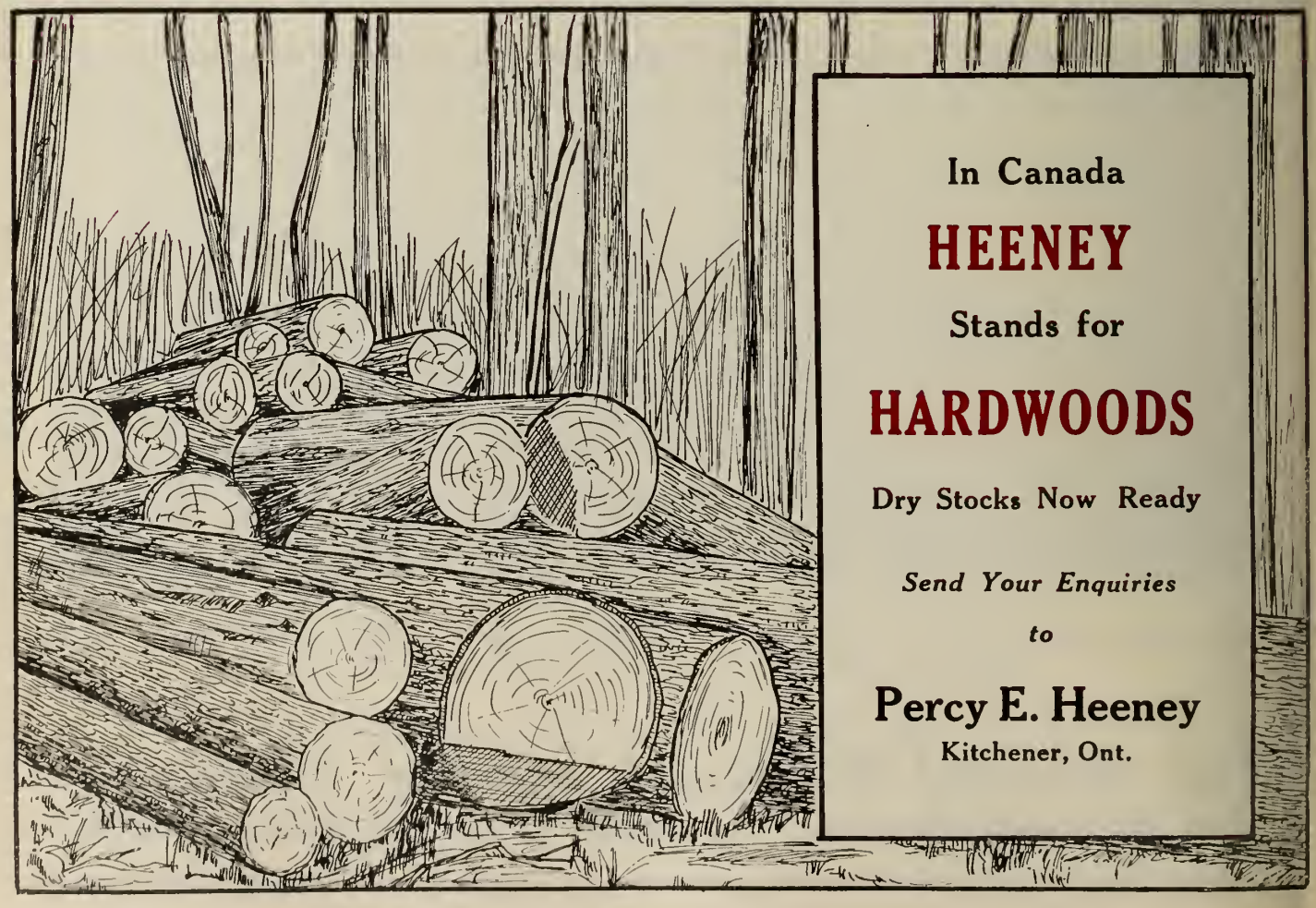
The Best That Money Can Buy

PEDWELL Since 1883 Service to Hardwood Users

Get Our Prices

The PEDWELL HARDWOOD LUMBER CO.

Office and Yard: Foot of Spadina Ave. - - TORONTO



In Canada

HEENEY

Stands for

HARDWOODS

Dry Stocks Now Ready

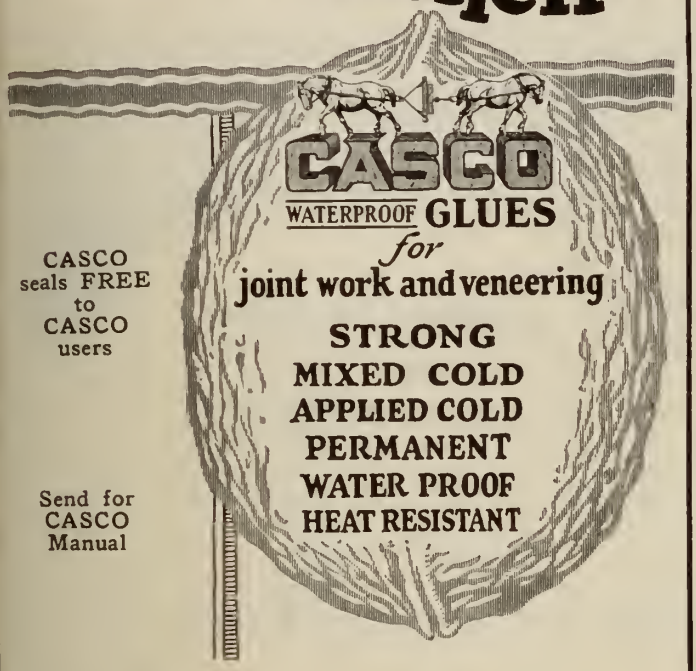
Send Your Enquiries

to

Percy E. Heeney

Kitchener, Ont.

In a Nutshell-



CASCO seals FREE to CASCO users

Send for CASCO Manual

THE CASEIN MANUFACTURING CO.
Largest Manufacturers of Casein Products in America
15 PARK ROW NEW YORK
Branch Offices in Principal Cities

Humidigraph

The latest help in drying—
Ask us about it—

The STANDARD Dry Kiln Co.

1542 McCarty St., Indianapolis, Ind.

Mr. SASH & DOOR MANUFACTURER

TROUBLE, TIME & MONEY SAVED BY USING

BULLDOG GRIP WOOD CEMENT

YOU MIX IT COLD, YOU USE IT COLD, ON COLD LUMBER. NOT NECESSARY TO HEAT YOUR LUMBER. DRAUGHTS OR NOTHING ELSE WILL HARM IT. ABSOLUTELY WATERPROOF. IT WILL NOT COME APART, EVEN IF SOAKED IN WATER FOR DAYS.

95% OF MONTREAL S. & D. MFRS. USE "BULLDOG GRIP" WOOD CEMENT

WRITE US TO-DAY FOR A SAMPLE

Canadian Wood Cement Co. Incorporated

Casein Manufacturers

279 Visitation St. Montreal, P.Q.

PERKINS
183
TRADE MARK
REG. U. S. PAT. OFF.

You Buy Service —and Dependability

WHEN you purchase "PERKINS 183" you buy the best of material, combined with an efficiency in manufacture made possible by our years of experience in producing uniform vegetable glue.

You buy ***service*** and ***dependability***—and ***value***.

It was in the organization of the Perkins Glue Company that vegetable glue for the wood using trade was developed—and from its beginning the company has maintained its policy of furnishing only a standard dependable glue.

You are not experimenting when you select "PERKINS 183." It is acknowledged by experienced users as the highest type of vegetable glue—the leader in the field —and has a consistent history of service to recommend it.

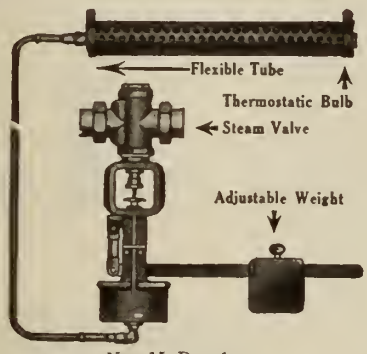
Patents covering Perkins Glue have been held valid and infringed by the United States Circuit Court of Appeals. Patents have also been granted in Canada, Great Britain, Germany, France, Belgium, Italy, and other foreign countries.

PERKINS GLUE COMPANY

Factory and General Offices:
Lansdale, Pennsylvania

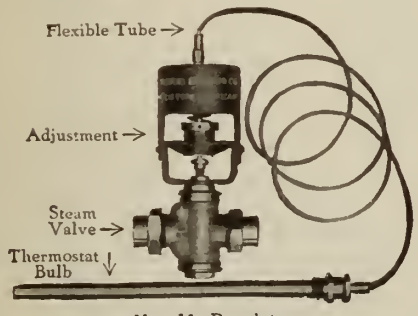
Sales Office:
South Bend, Indiana

Automatic Temperature Control Saves this firm $13,173 a year



No. 15 Regulator

This regulator automatically controls the temperature of any process requiring a steady, accurate temperature of air. It is easily installed and may be adjusted for different temperatures as desired. Self-contained, needs no air or water pressure for its operation. Ask for Bulletin 138.



No. 11 Regulator

Controls temperature of liquids in vats, tanks, retorts, kettles, etc. Easily installed. Accurate and dependable. Ask for Bulletin 129.

Save 20% of Fuel and Increase Output of Men —New York State Commission on Ventilation says increase of room temperature from 68° to 75° reduces output of men 15 per cent. 20% more fuel is also consumed. You save these losses by using thermostats like one shown in oval to control temperature in factories, offices, schools, etc. White for booklet "The Elimination of Heat Waste."

HANDSOME profits are being earned from money invested in automatic temperature control. It speeds up production, eliminates sub-standard products, and saves fuel and labor when applied to any process requiring an accurate, uniform temperature.

Here's Proof—$685.16 invested in six Powers Regulators like the one shown on the left are saving $13,173 a year for Lyon & Healy, Inc. of Chicago.

These regulators control the heat in wood-drying kilns and have been in operation for 8 years without repairs of any kind. Drying time has been reduced from 24 to 15 days, increasing capacity of kilns 60%, and saving 135 days drying time a year; coal saved amounts to $3,942; saving of lumber formerly spoiled by "warping" and "checking" amounts to $8,748; and ⅛ of foreman's time is also saved. These are the chief savings of this installation which appear in a report of investigation made by H. P. Gould Co., Chicago. Copy of report sent upon request.

Make this 30 day test FREE—It costs you nothing to **know** just what automatic temperature control will save you. Without obligation you can put a Powers Regulator on a tank, vat, or steam kettle, in a drying room, oven, or work room—wherever an accurate uniform temperature will save you money. Check up on the regulator's performance. If a 30 day test convinces you that it will be a mighty good investment for your firm, pay us for it, if not, return it.

Write today and tell us where and for what purpose you want accurate temperature control.

Our staff of engineers and more than thirty years of experience is at your service.

The Canadian

Powers Regulator Co., Ltd.

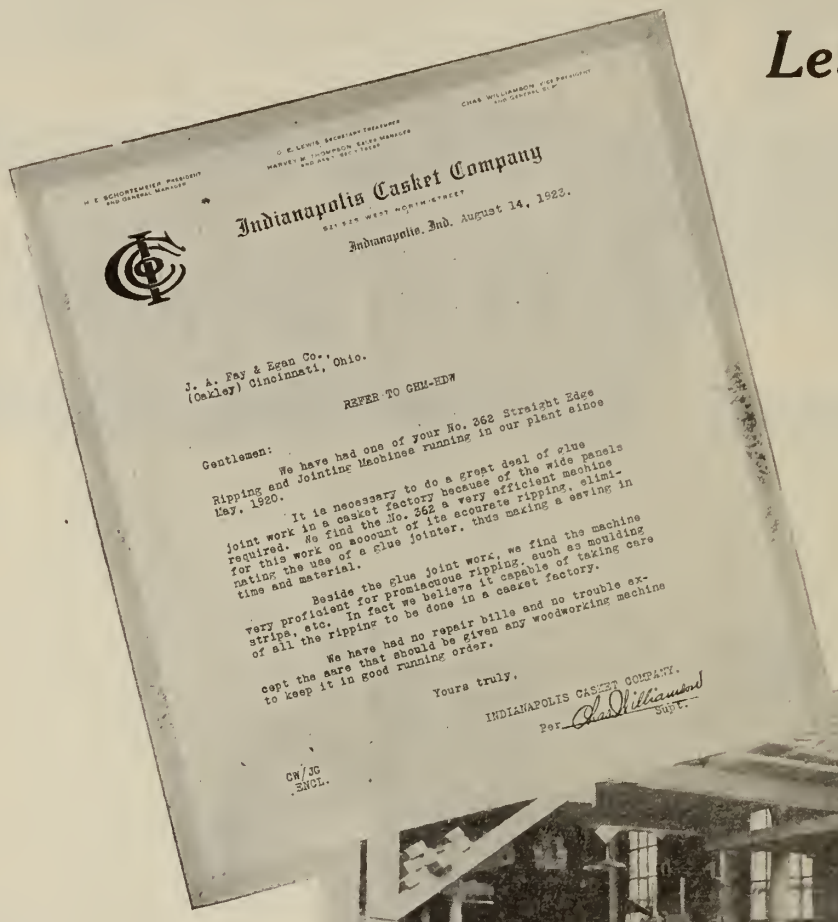
106 Lombard St. — Toronto

Calgary, Alta. Halifax, N.S. Montreal; Que.
Vancouver, B.C. Winnepeg, Man. (2454)

THE POWERS REGULATOR CO.

Over 30 Years of Specialization

in the Manufacture of Apparatus to Automatically Control Temperature



Indianapolis Casket Company

Indianapolis, Ind. August 14, 1923.

J. A. Fay & Egan Co.,
(Oakley) Cincinnati, Ohio.

REFER TO CHM-HDW

Gentlemen:

We have had one of your No. 362 Straight Edge Ripping and Jointing Machines running in our plant since May, 1920.

It is necessary to do a great deal of glue joint work in a casket factory because of the wide panels required. We find the No. 362 a very efficient machine for this work on account of its accurate ripping, eliminating the use of a glue jointer, thus saving in time and material.

Beside the glue joint work, we find the machine very proficient for promiscuous ripping, such as moulding stripe, etc. In fact we believe it capable of taking care of all the ripping to be done in a casket factory.

We have had no repair bills and no trouble except the care that should be given any woodworking machine to keep it in good running order.

Yours truly,

INDIANAPOLIS CASKET COMPANY.

Per Chas. Williamson
Supt.

CW/JC
ENCL.

Let those who own one tell you why

!

You Can

—Glue right up from the saw.

—Save 1/8" to 1/4" of lumber on every joint.

—Eliminate the glue jointer operation—by using a

"Lightning" No. 362 Straight Edge Ripping and Jointing Saw

Send for Circulars

J. A. Fay & Egan Company

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

2705-2805 Robertson Ave. (Oakley) Cincinnati, Ohio, U.S.A.

Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.

Branches: Montreal, St. John, N. B., Winnipeg, Vancouver

It took French & Heald Co. less than a "few months" to place its second order for a Moistat System

Read this excerpt from the letter below:

"We expect that if the one installation we have in now continues to prove satisfactory that we will add one or more of them within the next few months." —French & Heald Co.

Now Please Read the Whole Letter

FRENCH & HEALD COMPANY
FURNITURE
MILFORD, N. H.

National Dry Kiln Co.,
Indianapolis, Ind.

August 9th, 1923.

Gentlemen:

We acknowledge receipt of yours of the 7th which has been handed to the writer for reply. For the past few weeks since your Mr. Gray changed over the pressure of our steam line from 50 to 20 pounds we have been getting quite satisfactory results from the Moistat. We have been able to regulate the action of the instrument so that it works automatically on all the various grades of lumber that we are drying and have been able to cut down our drying time approximately 50%.

We are just completing today a run of 4/4 West Virginia plain red oak in a little over seven days drying time and under the old conditions we would be allowing the lumber to stay in the kiln for 12 to 15 days.

We are drying 4/4 birch in 5 to 6 days and under the old conditions it used to take anywhere from 9 to 12 days.

We are now getting into the running of the Moistat so that we feel enough acquainted with same to be reasonably satisfied with the results that we are obtaining but feel that we will be able to make more satisfactory results as time goes on.

In regard to the condition of the lumber after coming from the kiln since the installation we are pleased to say that we are sure the lumber is better dried and freer from other drying defects which we used to experience to some extent under the old conditions.

We expect that if the one installation we have in now continues to prove satifactory that we will add one or more of them within the next few months.

Yours truly,
FRENCH & HEALD CO.
E. D. Heald, Asst. Mgr.

Not long after this letter was received the French & Heald Company ordered its second MOISTAT.
Our files are full of letters expressing complete satisfaction over MOISTAT installations. All of them are filled with actual facts and specific information regarding the drying of lumber that should be in your files.
Let us send you copies of these letters and descriptive literature. As a business man you want to know what progressive lumber manufacturers, many of them your competitors, are doing. Send for this information today.

The National Dry Kiln Company

1117 East Maryland Street **Indianapolis, Indiana**

Branches: Albany, N.Y.—Memphis, Tenn.

NATIONAL DRY KILNS

Where are values to-day?

The insurance of your property is a matter of grave importance. It can be made on an economical, safe basis —if you have a Canadian Appraisal —or it can be the reverse, if you use book values, old appraisals, or an estimate of present worth.

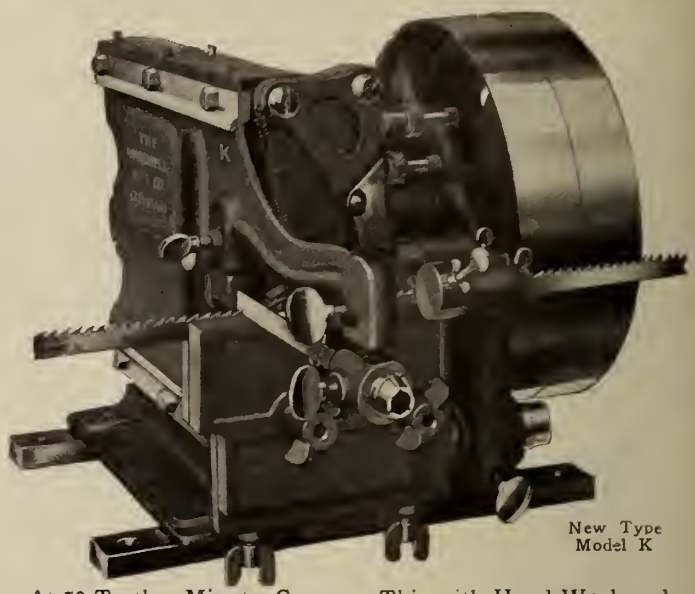
Insurance protects values, not property. If you don't know exactly what those values are now, there is no possible means of insuring them safely or economically. This is a service in which we are eminently fitted to serve you.

The Canadian Appraisal Co. Limited

364 University St., MONTREAL

TORONTO Royal Bank Bldg. **NEW YORK** Equitable Bldg.

ONE OPERATION COSTING 5 CENTS AUTOMATICALLY FILES AND SETS THE BAND SAW



New Type Model K

At 70 Teeth a Minute, Compare This with Hand Work and

FIGURE THE SAVING

In use by over 400 Furniture Factories and by over 65% of the Automobile plants. Four of the largest saw-makers each have from 5 to 15 in their plants.

Write for Details

THE WARDWELL MFG. CO.

120 Hamilton Ave. Makers of a full line of Saw Sharpening Machinery Cleveland, O.

"WILLIAMS"

List of good used Woodworking Machinery with guarantee backed by over forty years of satisfactory service. Now, as in the past, let us serve you.

PLANERS AND MATCHERS

1 New 20" Eclipse Planer and Matcher
1 Used 27" x 7" C.M.C. No. 107
1 Used No. 20, 15 x 6 Woods High Speed Planer and Matcher.
1 New 15 x 6 C.M.C. No. 109, three side
1 New Fay & Egan Flooring Planer and Matcher

SINGLE SURFACE PLANERS

1 Slightly Used Preston No. 121 24" x 7" Single Surfacer
1 New C.M.C. No. 221 Heavy Pony Planer
1 Used Cowan No. 141, 24 x 7 Single Surfacer
1 New 26 x 10 Preston No. 123 Single Surfacer, with divided rolls.
1 New 30 x 10 Preston Ball Bearing Single Surfacer, with sectional rolls and chip-breaker

SHAPERS

1 New Preston High Speed Ball Bearing Shaper
1 Slightly Used Yates No. 201, 2-Spindle Shaper, with special countershaft
1 Used Cowan No. 93, 2-Spindle Shaper
1 Used McGregor, Type SN, 2-Spindle Shaper

MOULDERS

15" Yates Inside Moulder
1 Practically new No. 108 Yates 13" Four-side Moulder.
1 Used Ballantine 10", Four-side Moulder
1 Used Hespeler, Heavy Moulder, 12" top head, 10" bottom head, four-side
1 Practically New C.M.C. No. 317 Sash Sticker.

BAND SAWS

1 Used 26" Cowan Pedestal Type Band Saw
1 16" Union motor driven Band Saw, ½ H.P. Motor.
1 New 32" Silver Pedestal Type Band Saw

HANDLE LATHES

6 Westcott Broom Handle Lathes slightly used
2 No. 10 Ober Broom Handle Lathes; slightly used
2 Goodspeed Pail Handle Turners
2 Goodspeed Pail Handle Borers
1 No. 2 Ober, 44" Lathe
1 No. 1 Ober Axe Handle Lathe
1 Smith Broom Handle Sander.
1 Nash Broom Handle Sander

JOINTERS AND BUZZ PLANERS

1 New "Williams" 12", round safety cylinder
1 New C.M.C. No. 823, 12", round safety cylinder.
1 New Moak, 16", round safety cylinder
1 New Preston, 12", round safety cylinder

DOUBLE SURFACERS

1 No. 177 Berlin 30 x 12 Double Surface Planer.
1 No. 160 Used Yates Double Surfacer, round head, hopper feed.

SELF-FEED RIP SAWS

1 Used McGregor-Gourlay, R.I., with friction feed
1 Used No. 30 Hall & Brown Self-feed Rip Saw

SAW TABLES

1 New "Union" Motor Driven Bench Saw Table, ½ H.P. Motor
1 New Beach Combination Rip and Cross-cut Saw
1 New Woods Variety Saw
1 New "Williams" Light Variety Saw.

The A. R. Williams Machinery Co., Limited

(Established 1878)

64-66 Front St. W., Toronto **Phone Adel. 20**

If it's Machinery--Write "Williams"

P · A · X

Private Automatic Exchange

SIMPLE

The Automatic Telephone

Built to work automatically, surely, anytime, all the time. Easily understood and liked by foremen and superintendents.

Has no human troubles. Inexpensive, and once used indispensable, because any and complete information can be quickly secured from any part of the plant by simply turning the dial to the number wanted.

"A Pair of Wires and a Dial," telling of P.A.X. in operation is yours for the asking. Write our nearest House.

Northern Electric Company
LIMITED

MONTREAL TORONTO WINDSOR CALGARY
HALIFAX HAMILTON WINNIPEG EDMONTON
QUEBEC LONDON REGINA VANCOUVER

"Makers of the Nation's Telephones"

MANUFACTURING
Manual Telephones
Automatic Telephones
Wires & Cables
Fire Alarm Systems
Radio Sending and receiving Equipment

DISTRIBUTING
Construction Material
Illuminating Material
Power Apparatus
Household Appliances
Electrical Supplies
Power & Light Plants
Marine Fittings

I see I have been Too Shrewd

It was the lumber buyer for one of the country's largest furniture makers speaking. We had quoted him a few times but he had never been a buyer of IOWA WALNUT.

Finally he was persuaded to visit the mill. He was shown through the plant, shown the modern equipment, shown the care and pride taken in the production, and finally shown the finished product.

"I guess I have been too shrewd," he said, "I've been buying elsewhere because I could buy the same grade at a fraction of a per cent less than your price. But your No 1 common and firsts and seconds has a quality that I have not been getting in the lumber I have been buying of that grade, even though technically it grades the same." He gave us a good order and has been a regular customer ever since.

We can't bring ever buyer to the mill. But we can convince yourself by simply placing one order for IOWA WALNUT, and comparing it with the same grade of goods you have been getting. You'll find a fineness of texture, and beauty of marking that ordinary grading doesn't define.

Des Moines Sawmill Co.

1024 Murphy St., Des Moines, Iowa

Representatives:

H. R. Truesdell, Third Nat'l Bank Bldg., Rockford, Ill.
N. F. Owings, 232 Lyon St., N.W. Grand Rapids
H. E. Wilson, 305 Norton Bldg., Louisville. Ky.
F. G. Cummings, 243 Dartmouth St., Rochester, N.Y.

IOWA WALNUT

We wish to announce that

MR. WALTER S. McBEAN, 200 ST. CLARENS AVE., TORONTO is our CANADIAN REPRESENTATIVE.

If you want ASH, CHESTNUT, OAK, PLAIN AND QUARTERED, WHITEWOOD, WALNUT AND OTHER AMERICAN HARDWOODS, either Mr. McBean or ourselves, would be glad to serve you.

We operate our own band mills, dry kilns, planers and resaws.

Louisville Point Lumber Co., Inc.

1144 Fulton St. - Louisville, Ky.

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo.

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Ply Wood Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

OAKEY'S

Glass Paper, Flint Sand Paper, Garnet Paper

IN SHEETS AND ROLLS FOR ALL PURPOSES

Rolls 50 yards long, 18 in., 20 in., 24 in., 30 in., 36 in., 40 in., 42 in. and 48 in., wide

SHEETS, DISCS, STRIPS AND BANDS can be made to Special Sizes to suit the requirements of Purchasers

JOHN OAKEY & SONS LTD., WELLINGTON EMERY AND BLACK LEAD MILLS LONDON, S. E. 1.

Canadian Agents:

F. Manley, 290 McDermott Ave. W., Winnipeg, Man. Sankey & Manson, 839 Beatty Street, Vancouver, B.C.
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CARVED MOULDINGS, CARVINGS, CARVED LEGS

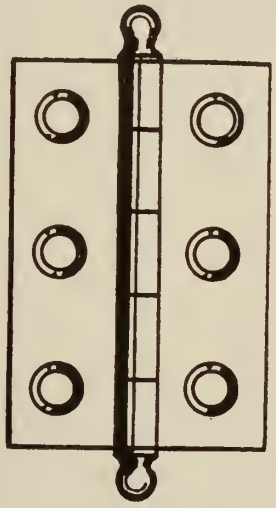
No. D-775 (Reduced One-Half)

No. D-763 (Reduced One-Half)

"KLISE" mouldings are carved, not pressed. Made in several hundred classic, period designs, in various sizes and shapes. Catalogue of legs and samples of mouldings sent on request. Send us your designs or samples of carvings for quotation.

KLISE MANUFACTURING COMPANY
Grand Rapids, Michigan

BUTTS



Both plain and ball tip in five sizes

1" 1¼" 1½" 1¾" 2"

In any desired finish

Larsen & Shaw Ltd.

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Manufacturers of
FURNITURE HARDWARE AND SPECIAL STAMPINGS

BLACK BROS.
CLAMPS

Where Black Bros. Clamps are known, there is no second choice. Know them.

Sold by Aikenhead Hardware Ltd., Toronto Vokes Hardware Co., Ltd Toronto J. L. Neilson & Co., Winnipeg and other leading dealers throughout Canada.

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Clamps, Saw Sets, Saw Vises,
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PEMBROKE PLYWOOD COMPANY, Pembroke, Ont.

Manufacturers of Rotary Cut Veneers, Only the Finest Selected Logs Used, Birch Sheet Stock Our Specialty.

Prompt Service and Quality Guaranteed - - Your Correspondence Invited

TORONTO HARDWOOD LUMBER COMPANY, LTD.

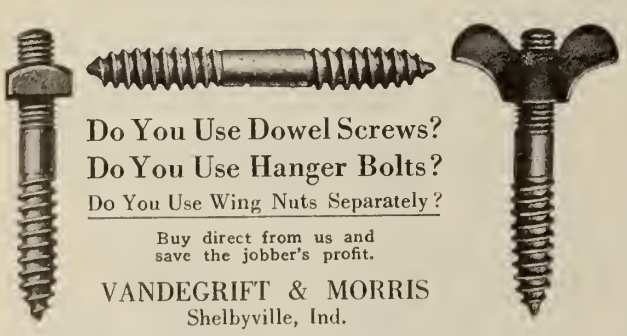
Wholesalers and Retailers of Canadian, American and Tropical Hardwoods of every description; 3-ply and 5-ply Panels in stock sizes

Carried in our Toronto Yard available for immediate shipment to out-of-town customers, ample stocks of the following:

MAHOGANY	4/4 to 8/4	WHITE ASH	4/4 to 20/4
WALNUT	3/8 to 24/4	BIRCH	4/4 to 16/4
CHESTNUT	4/4 to 8/4	BEECH	4/4
PLAIN RED OAK	1/2 to 16/4	BASSWOOD	4/4 to 8/4
PLAIN WHITE OAK	1/2 to 16/4	WILLOW	4/4
QTRD. WHITE OAK	4/4 to 8/4	CHERRY	4/4 to 6/4
YELLOW POPLAR	5/8 to 16/4	BUTTERNUT	4/4 to 10/4
QTRD. RED GUM	4/4 to 8/4	S. L. YELLOW PINE	4/4 to 6/4
QTRD. SAP GUM	4/4 to 8/4	CALIFORNIA REDWOOD	4/4 to 6/4
PLAIN RED GUM	4/4	SPANISH CEDAR	3/8 to 6/4
PLAIN SAP GUM	4/4 to 6/4		

Stock panels ¼" 3-ply and ⅜" 5-ply in Walnut, Mahogany, Qtrd. White Oak, Plain Red Oak, Birch, Figured Red Gum, Good 1 Side, and Good 2 Sides, in sizes 20" x 60", 24" x 60", 30" x 60", 24" x 72", 30" x 72", 36" x 72".

Office, Yard, and Warehouse, 29-49 Atlantic Ave., G. T. R., TORONTO. Phone Lake 1953
Band Saw-mill and Dry-kiln, Louisville, Ky.



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Do You Use Wing Nuts Separately?

Buy direct from us and save the jobber's profit.

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HARDWOODS

Native and foreign hardwoods, specially selected for the woodworking and furniture trades. Also Crating Spruce, Pine and Hemlock, Canadian Birch, Basswood and Maple.

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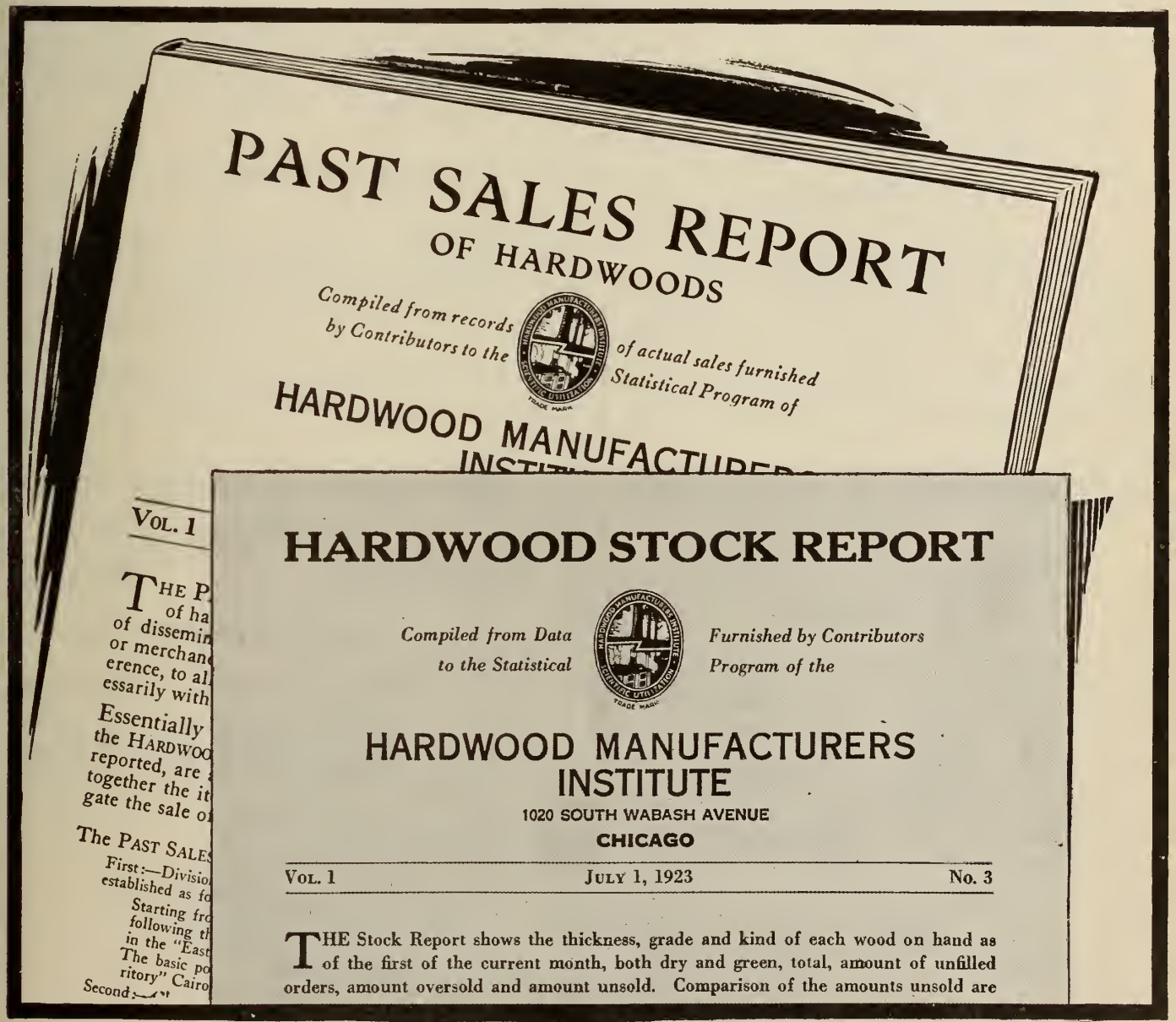
Actual Hardwood Sales and Stock Reports

in a New Service to Producers, Distributors, Consumers and the Public

Issued by the Hardwood Manufacturers Institute, 1020 South Wabash Ave., Chicago



Write Hardwood Institute

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE, LA.

Southern Office: MEMPHIS, TENN.
Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum
Quartered Red Gum
Plain Sap Gum
Quartered Sap Gum
Cottonwood, Cypress
Tupelo, Ash, Elm, Oak

STRONG GLUE
means
STRONG JOINTS

The most critical Woodworkers have used DUNN'S GLUES for nearly Half a Century.

Uniform Shipments Guaranteed

Let us solve your glue problems. Our Service Department is at your disposal and places you under no obligation whatsoever.

Free working samples upon request.

THOMAS W. DUNN CO.
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P.O. Box 672 MONTREAL, P.Q.

From Old Kentucky

The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

Ash, Oak, Gum, Poplar, Hickory, Walnut, Chestnut, Beech, Maple, Elm, Sycamore, Cottonwood. Quotations promptly.

J. V. STIMSON & CO.
Owensboro - Kentucky
Bandmills Owensboro; Campbellsville, Kentucky

Mercereau-Hawkins Tie Company

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West Virginia and Southern
HARDWOODS

We specialize in

Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of
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WHITE PINE

Good Dressing Grades

Specialize in 1 2 & 3 Cuts

Dry Hemlock Pine and Spruce

Ontario and Quebec Stock

All Dimensions

WANTED

500,000′ 1 x 4 to 8—8/16′ Jack Pine and Spruce D2S C. M. not more than 15% 5th.

500,000′ 2 x 4 8/16′ Spruce D4S —¼ Scant—not less 25% 14′, 16′ Lengths.

Ties and Piling

Also Pine, Hemlock and Spruce Lath

Prompt Shipment

THE BIG BEAR LUMBER CO.

Telephones Main 1218-1219. Suite 416 Excelsior Life Building, Toronto, Ont.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

Mills Coal Grove Ohio

General Offices: 33 Rector St. New York City

A Permanent Lumber Service

AFTER several years of inactivity we are now cutting on our modern fully equipped mills at Manistique and Little Lake, Upper Michigan. The timber behind these mills was purchased many years ago by the Stack interests from the then "unlimited" supply. Its quality, particularly the maple and birch, is the envy of northern mill men among whom this tract is famous.

This timber will run the mills to full capacity for fifteen to twenty years. The 40,000,000 feet annual cut will run:

15,000,000 ft. maple annually
6,000,000 ft. birch annually
2,500,000 ft. beech annually
2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually
the balace in Spruce and Tamarack.

Our exceptional service, grades, and manufacture will be maintained. "Low freight rate shipments by water to Toronto, Montreal, Owen Sound, Port Arthur, and other Great Lakes and St. Lawrence River Ports. Conveniently located also for rail shipments to inland points by the C.P.R. or Soo line."

We will be pleased to hear from old friends and from new ones who can understand and appreciate what permanent connection with such a source of supply would mean.

STACK LUMBER CO.

ESCANABA MICHIGAN

Southern Hardwoods

MISSISSIPPI DELTA GUM

The Best That Grows

OUR mills are producing some beautiful stock at the present time, and we can assure prompt delivery in any quantity.

Plain and Quartered Red and Sap Gum, Plain and Quartered White Oak, Plain Red Oak, Cottonwood, Cypress, Ash, Elm.

MISSISSIPPI VALLEY HARDWOOD CO., INC.

Bandmills: Memphis, Tenn., Clarksdale, Miss.
Sales Office: Memphis, Tenn.

MISSISSIPPI DELTA GUM The Best That Grows

OAK
ASH GUM ELM
MAGNOLIA SYCAMORE
COTTONWOOD

We carry a full line of Southern Hardwoods ready for immediate shipment. All stocks are well manufactured and priced right.

Write or wire for prices.

SOUTH TEXAS LUMBER COMPANY

MANUFACTURERS OF HARDWOODS AND SOUTHERN PINE

General Sales Office: Houston, Texas Band Mills: Onalaska, Milvid, Connell, Dayton, Cleveland, and Fuqua

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

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We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills : Memphis, Tenn., Helena, Ark., Floyd, La.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK:

3	cars	4/4"	Fas
1	"	5/4"	Fas
5	"	4/4"	No. 1 Common
1	"	4/4"	No. 2 Common

PLAIN WHITE OAK:

5	cars	4/4"	Fas
2	"	5/4"	No. 1 Com. & Btr.
10	"	4/4"	No. 1 Com. & Sel.
7	"	4/4"	No. 2 Common

PLAIN RED OAK:

6	cars	4/4"	Fas
3	"	5/4"	Fas
3	"	6/4"	Fas
1	"	8/4"	Fas
8	"	4/4"	No. 1 Common
10	"	5/4"	No. 1 Common
2	"	6/4"	No. 1 Common

QUARTERED RED GUM:

5	cars	4/4"	Fas
4	"	4/4"	Fas. Fig.
6	"	5/4"	Fas
7	"	6/4"	Fas
10	"	4/4"	No. 1 Common
10	"	5 4"	No. 1 Common
10	"	6/4"	No. 1 Common
10	"	8/4"	No. 1 Common

QUARTERED RED GUM S.N.D.:

5	cars	5/4"	No. 1 Com. & Btr.
5	"	6/4"	No. 1 Com. & Btr.
10	"	8/4"	No. 1 Com. & Btr.

ASH:

4	cars	10/4"	No. 1 Com. & Btr.
2	"	12/4"	No. 1 Com. & Btr.
2	"	4/4"	No. 1 Common
2	"	4/4"	No. 2 Common

SAP GUM:

8	cars	4/4"	Fas
3	"	5/4"	Fas
3	"	6/4"	Fas
15	"	4/4"	No. 1 Common
8	"	4/4"	No. 2 Common
5	"	5/4"	No. 1 Common
5	"	6/4"	No. 1 Common

COTTONWOOD:

2	cars	4/4"	Fas
2	"	4/4"	x 9 — 12" Box Bds.
2	"	4/4"	x 13 — 17" Box Bds.
6	"	4/4"	No. 1 Common
2	"	4/4"	No. 2 Common

ELM:

2	cars	4/4"	Log Run
6	"	10/4"	Log Run
6	"	12/4"	Log Run

1" to 4 No. 1" Common and 1s & 2s **HARD MAPLE**
Excellent widths and lengths.
Can kiln dry and surface.
G. Elias & Bro., Inc. Elk Street to the Buffalo River **Buffalo, N. Y.**

BUFFALO *"Buy and Sell Hardwood in this Market."*
FAMOUS LUMBER CENTER
Unequalled facilities for rapid dispatch, by Rail, Lake or Barge Canal, on all your requirements, large or small.
SUPPLYING THE HARDWOOD NEEDS OF THE NATION

MILLER, STURM & MILLER
Hardwoods of All Kinds
1142 Seneca Street

YEAGER LUMBER CO., INC.
Our Specialities
Oak Poplar Ash Maple
932 Elk Street

Taylor & Crate **Hardwoods of All Kinds**
A stock of 18,000,000 to 20,000,000 ft. of Hardwoods carried at all times at our big Buffalo yards.
RAIL AND CARGO SHIPMENTS
Established 56 Years
2101 Elmwood Avenue

STANDARD HARDWOOD LUMBER CO.
Hardwoods
Prompt Shipments—from Buffalo Yards or from Mill direct to you
8,000,000 feet Dry Stock on Hand. 1333 Clinton Street

Buffalo Hardwood Lumber Co.
940 Seneca Street
J. B. Wall, Pres't
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We specialize in—WHITE ASH, OAK AND MAPLE

HUGH McLEAN LUMBER CO.
HARDWOODS OF ALL KINDS
Our Specialties—Quartered White Oak, Plain and Quartered Gum
940 Elk Street

ATLANTIC LUMBER COMPANY
HARDWOODS
Our Specialty—West Virginia and Pennsylvania Cherry
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A complete stock of seasoned Hardwoods
Including Ash, Basswood, Birch, Cherry, Chestnut, Cypress, Elm, Gum, Hickory, Maple, Plain and Quartered Oak, Poplar and Walnut.
1100 Seneca Street

T. SULLIVAN & COMPANY
NORTHERN
Gray Elm and Maple
Niagara Street Corner Arthur

FRANK T. SULLIVAN
Specialties
Cherry, Walnut and Pacific Coast Woods
Main Office: 600 Ellicott Square. Yard: 2598 Delaware Ave.

"Chosen by preference when seen in comparison"

For Those Who Demand Service!

In sending your orders to CHAS. O. MAUS, you will find an organization with the facilities and the willingness to co-operate to the utmost. "Service" is a reality, not a make believe.

Try us on the following:

Gum, Oak, Cottonwood, Magnolia, Ash, Cypress, Elm, Tupelo, Willow, Maple, Canadian Birch.

BIRCH
OAK C.O.M GUM
CYPRESS

CHAS. O. MAUS

Box 676

South Bend, Indiana

I am not connected with any other concern using my name.

Efficiency Marks Every Step of Our Service to You

HARDWOOD MANUFACTURERS INSTITUTE · SCIENTIFIC UTILIZATION · TRADE MARK

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

STARK
The LAST WORD in K QUALITY & SERVICE
BRAND

HARDWOODS
Oak, Ash, Gum, Poplar, Maple, Elm, Cottonwood, Sycamore.

CYPRESS
Lath, Lumber, Dimension.

VENEERS
Door Panel, Piano Rim, Cypress Battery Stock.

OAK FLOORING
"Chickasaw Brand"

Twenty-two Years of Steady Growth

We have expanded our manufacturing, kiln-drying and surfacing facilities until today we are operating three band mills, a sawn veneer plant, a 4-section battery of progressive dry kilns and a motor-driven planing mill. Our output is therefore both larger and better-balanced than ever before, enabling us to meet every requirement of fabricators and yarding interests in

Southern Hardwoods - Cypress
Sawn Veneers - Oak Flooring

We are exercising such care in manufacturing, drying and surfacing that Stark quality is both holding old and winning new customers. Our service, too, is being rendered increasingly efficient. If skilful manufacture and up-to-date merchandising appeal to you, send us a trial order. We believe you will find, as others are finding, real saving in time and money.

James E. Stark & Company, Inc.
Memphis Veneer & Lumber Co.

MANUFACTURERS

General Offices
MEMPHIS, TENNESSEE

Chicago Offices
25 N. DEARBORN ST.

"Better Use Birch"

BIRCH for Popular Priced Furniture

Birch is fast out-distancing all competitors as the ideal wood for moderate priced furniture. No other cabinet-wood combines the features of economy, strength and beauty to the same degree. Birch machines well, for the fibres are closely knit and will not tear. Neither does the grain rise. In the finishing room, Birch shows at its best. Its velvety surface takes all finishes well and becomes satin in the hands of the rubbers. As a base for enamel, too, Birch has few equals. The surface is hard and unyielding, offering great resistance to dents, and preserving its original beauty for years.

Anderson, Shreiner & Mawson

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Mills at South River Ontario

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

56 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar both plain and quarter sawed, Sound Wormy Chestnut, Cypress and Ash.

"Wire collect for prices or other information. Time is Money, delays pay no dividend."

DONT TAKE THE CHANCE!

BRANDED

THIS SHIELD PROTECTS YOU N

From Dissatisfaction and Inferior Quality in

RED GUM, OAK, WHITE ASH and ELM

STANDARDIZED GRADES

E. B. NORMAN & CO.

LOUISVILLE, KY.

BAND MILLS: ST. LANDRY, LA. MEEKER, LA.

HARDWOOD MANUFACTURERS INSTITUTE SCIENTIFIC UTILIZATION TRADE MARK

WORTH WRITING FOR?

AMERICAN PLYWOOD CORPORATION

We have a stock of

Wisconsin Brown Ash and Yellow Pine Panels

that we are anxious to move for floor space and are offering at attractive prices.

Ask for list with prices.

AMERICAN PLYWOOD CORPORATION

420 Wolfe River Ave. New London, Wisconsin, U.S.A.

OTIS
TRADE MARK

Tabasco
Honduras

ESTABLISHED 1867
INCORPORATED 1886

Laguna
Mexican

MAHOGANY

Rarely are such stores of precious wood to be found as may be seen in our yards. Across the seas from tropic lands it comes. From thick jungles where the light of day but dimly penetrates and where tangled native paths make difficult the bringing out of timber. Here the black man labors, risking life from jungle dangers, that supplies will not diminish and your orders may be filled.

Twelve million feet per year is the capacity of OTIS mills. An adequate supply is always on hand for prompt shipment. Get our prices.

Otis Manufacturing Company

Peters Avenue and The River

NEW ORLEANS, LA.

Chicago Office: Room 208, 128 N. Wells Street

Ritter Appalachian Oak affords economy as well as unsurpassed elegance in the manufacture of high grade cabinet work.

Beauty in Design and Finish

For the manufacture of high grade cabinet work, oak has long been recognized as highly desirable because of its strength, beauty, and adaptability. But only oak of close, subdued grain, however, can give the refinement of appearance and softness of line required for the best designed furniture and artistically constructed cabinet work.

Because of its uniformly fine grain and mild texture, Ritter Appalachian Oak can be easily and beautifully finished. It readily absorbs finishing materials, whereas the coarser, harder oaks resist them.

Ritter Appalachian Oak is adaptable to good design, insures economy in machining and finishing, and affords greater beauty in the completed product.

Write us for additional information

W. M. RITTER LUMBER COMPANY

America's Largest Hardwood Producer—Annual Capacity—130,000,000 Feet

General Offices MEMBER OF NATIONAL HARDWOOD LUMBER ASSOCIATION **COLUMBUS, OHIO**

RITTER

APPALACHIAN OAK

KIRBY-LUMBER COMPANY

HOUSTON - TEXAS

Manufacturers ***Exporters***

SOUTHERN HARDWOODS

Over One Billion Feet of Hardwood Timber

— *Our Specialties* —

Soft Textured Neches Valley Red Gum
Steam Cured Bright Sap Gum

"KIRBY FOR QUALITY IN QUANTITY"

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	42,000	10,500	171,000	175,000
1¼ in.	27,000	.....	10,000	19,000
1½ in.	28,200	100	23,000	96,000
2 in.	3,000	.....	9,000	68,000
2½ in.	4,500	.....	4,300	3,000
3 in.	21,700	.....	4,500	4,000
4 in.	9,300	.....	900	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,600	.....	3,000	.....
1 in.	88,000	.....	168,000	138,000
1¼ in.	10,000	450	77,000	57,000
1½ in.	14,700	1,600	92,000	400
2 in.	16,000	.....	38,000	32,000
2½ in.	2,000	.....	.....	.....
3 in.	1,300	.....	.....	.....
4 in.	1,500	.....	300	.....

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	14,000	7,000	15,900	3,000
¾ in.	51,000	160,000	.....	23,000
1 in.	91,000	124,000	44,200	125,000
1¼ in.	33,000	14,600	.....	.....
1½ in.	22,000	14,000	.....	1,500
2 in.	26,000	51,000	4,000	9,000
2¼ in.	3,200	3,200	.....	.....
2½ in.	110,000	41,000	2,000	1,800
3 in.	42,000	26,000	300	400
3½ in.	4,500	3,000	.....	.....
4 in.	47,000	17,800	600	500

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	50,000	224,000	1,500	.....
⅝ in.	.....	53,000	21,000	2,400
1 in.	76,000	64,000	18,500	75,000
1¼ in.	52,000	148,000	2,000	2,100
1½ in.	50,000	74,200	5,000	2,500
2 in.	67,000	132,000	26,000	10,000
2¼ in.	1,500	1,400	.....	.....
2½ in.	96,100	34,000	.....	.....
3 in.	57,800	37,000	5,000	12,000
4 in.	30,600	14,600	.....	.....

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	.....	.....	4,700	500
1 in.	7,200	6,400	11,000	1,400
1¼ in.	6,900	.....	7,900	.....
1½ in.	400	.....	4,000	.....
2 in.	.....	.....	7,400	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	.....	.....	.....
¾ in.	3,900	.....	2,300	3,000
⅝ in.	.....	.....	400	800
1 in.	80,000	400	25,000	3,700
1¼ in.	19,000	27,300	73,000	5,800
1½ in.	18,000	500	25,500	200
2 in.	.....	.....	22,000	5,700
2½ in.	2,000	.....	300	.....
3 in.	4,000	.....	1,200	.....
4 in.	5,600	.....	900	200

TENNESSEE SCENTED CEDAR

1 in.—40,000
1¼ in.— 1,500

PLAIN RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	99,000	158,000	16,200	5,870
1¼ in.	21,000	36,000	2,700	800
1½ in.	15,000	50,000	15,500	....
2 in.	5,000	34,000	15,000	10,000
10/4	.....	1,500	600	600

QUARTERED SAP GUM

	1 & 2	No. 1C	No. 2C
4/4	.....	1,800	.....
5/4	.....	9,000	.....
8/4	.....	18,000	800	.....
10/4	.....	15,000	14,300	.....
12/4	.....	300	.....	300

POPLAR

	1 & 2 18" up	1 & 2	No. 1 Com.	Bright Saps
¾ in.	.....	4,000	2,700	.....
⅝ in.	1,000	48,000	12,100	67,900
1 in.	1,000	85,000	86,000	19,700
1¼ in.	2,300	10,000	89,000	23,000
1½ in.	4,300	3,000	3,000	29,000
2 in.	.....	10,300	5,000	78,800
2½ in.	.....	5,000	.....	11,800
3 in.	.....	2,600	8,000	19,000
4 in.	.....	3,000	6,500	9,200

Also Large Stocks of Ash, Basswood, Beech, Birch, Hard and Soft Maple.

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

One of Our Log Yards in East Carroll Parish, La.

Southern Hardwoods
and
Genuine Louisiana Red Cypress

GUM, OAK, ASH, COTTONWOOD, TUPELO, etc.

GLIMPSE NUMBER TEN INTO THE HARDWOOD OPERATIONS OF

E. SONDHEIMER CO.

(Cable Address—Sonderco-Memphis)

MANUFACTURERS

Band Mills:
SONDHEIMER, TALLULAH
ALEXANDRIA, LA.

Office and Distributing Yard:
MEMPHIS, TENN.
Chelsea and McLean Avenues

BANNING

FOR

OUR stock of WALNUT is complete. If you want real value, give us a chance on your next order.

Quality and prices are right.

Canadian Representative

A. E. Klippert, 11 Laxton Ave. Toronto, Ontario

FOR

HARDWOODS

We have the Following Items in Dry Stock

At our yards in Bay City and are in a position to make prompt shipment upon receipt of order:

HARD MAPLE	4/4 to 10/4	No. 1 Common & Better.
BEECH	5/8 to 8/4	No. 2 Common & Better.
BIRCH	4/4 to 12/4	No. 2 Common & Better.
BASSWOOD	4/4 to 8/4	No. 2 Common & Better.

Stock piled No. 2 Common & Better can be sorted for grades and shipped as wanted.

We have 17 dry kilns and fully equipped planing mill.
We are in position to furnish and will be pleased to answer inquiries for any of the Northern Hardwoods.

KNEELAND-BIGELOW COMPANY

BAY CITY - - MICHIGAN

From Missouri?

WALNUT

We will not tire you with a long article on the merits of our Veneers.

All Ads read just about alike—stressing **sourse of supply, quality of product, complete stocks, prompt shipments, c o u r t e s y of service, etc.**

We, too, could say all that and then some, but we won't.

Talk's cheap. We've got the goods.

WALNUT

STUMPS

BACK CUT

HALF-ROUND

ROTARY

SLICED

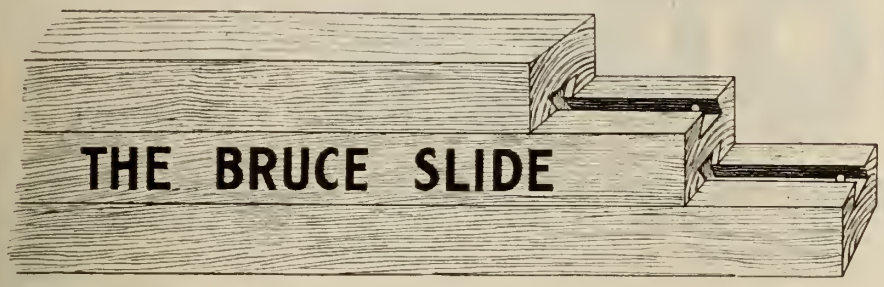
WALNUT

Let Us Show You

GEO. W. HARTZELL, PIQUA, O.

WALNUT SPECIALISTS

TABLE SLIDES TABLE RIMS TABLE PINS



Makers of—

The "Bruce Slide"

BRUCE WOODWORKERS, Limited, Chesley, Ont.

White Pine
Hardwoods

The Oliver Lumber Co.
of Toronto Ltd.
6 King St. West, Toronto

OAK
Plain and Quartered, Uniform Color—Soft Texture

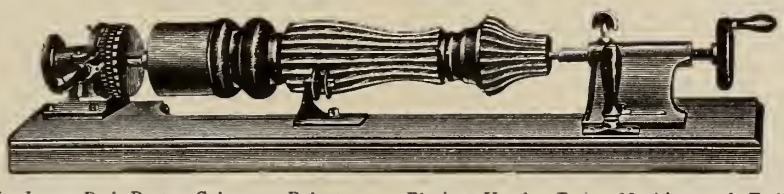
Poplar, Ash
and other
Hardwoods

Oak Timbers and Planking

THE
MOWBRAY & ROBINSON
LUMBER CO.
Office: CINCINNATI, OHIO

Canadian Representative:
A. K. Johnson, Bank of Hamilton Bldg., Toronto, Ont.

FLUTING HEADS
Shaper Attachment



For fluting Table Legs, Chair Legs, Bed Posts, Columns, Balusters, etc. Swings any diameter up to 8" and may be extended to any length. Spaces automatically number 1 to 48. Ask for circulars of Fluting Heads, Twist Machine and Twist Sander.

THE SHAWVER CO., SPRINGFIELD, O.

Canadian Representative:
The A. R. Williams Machinery Co., 64-66 Front St. West, Toronto

DODGE

Power Transmission Service is Taken for Granted

After we receive an order from a customer we rarely hear from him again until he is ready to place his next order. Then it comes along automatically.

There's no correspondence about delays. Promises as to delivery are fulfilled, and, of course, the quality of Dodge Power Transmission Machinery is never questioned. In brief, the reliability of Dodge Power Transmission Units has become so firmly established that it calls for no comment.

Power users expect the best in quality and service from us, and would be just as astonished as we should be ashamed if they were disappointed.

The point we particularly want to stress in this advertisement is: that an order for one small pulley or a few feet of shafting is just as welcome and as carefully looked after as a contract job.

Single pulley buyers of twenty and thirty years ago are today among our biggest accounts—we have grown and prospered together. Here's hoping we may see you develop in like manner. If you haven't one, send for our Catalogue B. 10.

DODGE MANUFACTURING CO. OF CANADA, LIMITED

Head Office and Works—Toronto
Branch Warehouse, 770 St. Paul St. West, Montreal

Distributors: Chapman Double Ball Bearings Ex Our Stock

QUARTERED WHITE OAK
15,000' 5/8" No. 1 Com.
6,000' 3/4" No. 1 Com.
10,000' 4/4" FAS.
31,000' 4/4" No. 1 Com.
12,000' 5/4" FAS.
26,000' 5/4" No. 1 Com.

PLAIN WHITE OAK
46,000' 4/4" FAS.
90,000' 4/4" No. 1 Com.
90,000' 4/4" No. 2 Com.

PLAIN RED OAK
5,000' 1/2" No. 2 Com. & Btr.
30,000' 3/4" FAS.
75,000' 3/4" No. 1 Com.
67,000' 4/4" FAS.
90,000' 4/4" No. 1 Com.
97,000' 4/4" No. 2 Com.
75,000' 4/4" Sound Wormy.

QUARTERED RED GUM
24,000' 3/4" Com. & Btr.
40,000' 4/4" FAS.
85,000' 4/4" No. 1 Com.
52,000' 5/4" No. 1 Com.
45,000' 6/4" FAS.
39,000' 6/4" No. 1 Com.
55,000' 8/4" FAS.
33,000' 8/4" No. 1 Com.

PLAIN RED GUM
13,000' 4/4" FAS.
80,000' 4/4" No. 1 Com.
24,000' 4/4" No. 2 Com.
13,000' 5/4" FAS.
76,000' 6/4" No. 1 Com.
70,000' 5/4" No. 1 Com.

QUARTERED SAP GUM
10,000' 1/2" No. 2 Com & Btr.
31,000' 5/4" No. 1 Com.
17,000' 6/4" FAS.
35,000' 6/4" No. 1 Com.

"BELLGRADE"

Bellgrade lumber comes from the famous Yazoo Valley. It is manufactured in thoroughly modern mills by men of life-long experience and is graded and shipped to N.H.L.A. Standards. In fact from the felling of the tree to the finished product "quality" is the one big factor.

Give Bellgrade a trial and you can't possibly be disappointed.

BELLGRADE LUMBER COMPANY
Memphis - Tenn.

CANADIAN
WOODWORKER
and
Furniture Manufacturer

A Monthly Publication of Trade News and Practical Information, reaching the factories producing Interior Finish, Doors, Sash, Flooring, Boxes, Aeroplanes, Furniture, Pianos, etc.

Woodworker Publishing Company, Limited
345 Adelaide Street West - - - - - - TORONTO

Branches:
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Vol. 23 Toronto, October, 1923 No. 10

Developing Market for Furniture

The editor of the "Furniture World" recently received a letter from a western furniture dealer. This communication is of interest because it outlines the views of at least one furniture retailer and offers constructive suggestions that should provide furniture manufacturers with food for thought. It is reproduced herewith:

Calgary, Alberta.

Editor, Furniture World:

We are very much interested in the concluding observations of an Editorial headed "Furniture Manufacturers Discuss Conditions" as set out in your September issue.

The paragraph referred to reads: "The industry in general is working to about 65 per cent capacity, but it is probably true that few of the manufacturers are making money, owing to the low level of prices."

Technically this is correct, but a child could easily make the deduction that were their prices high enough they would make money. Would it be good business, however, for the manufacturers to have prices at a higher level than at present even if it were possible?

The manufacturer knows that the prices were raised about March of this year, which raise had a very depressing effect on trade, and now he has receded to the January level. The merest student of economics knows that the solution is not the boosting of prices but rather the opposite, in order to get the volume, thereby lowering the tremendous overhead which has a very damaging effect on a small output.

We, as a representative retailer, take this opportunity of expressing our humble opinion that furniture at the present is entirely too high in price, and we do not lay it solely at the door of the manufacturer. The retailers cost of distribution is absolutely out of proportion, largely due to our sparsity of population, and the surplus number of quasi-dealers who have been started up chiefly through the instrumentality of the manufacturer.

When the manufacturers make their next yacht-cruise it would be well for them to take a survey of the Western retailers and their financial condition. They are already aware that many of us are hanging on by our eyelashes, trying our best to dispose of goods without the element of profit entering materially into the transaction. The other side of the picture is the manufacturer getting out a price list in March last advancing some articles to protect himself.

Prices, we are aware, is not the deciding factor, but under present conditions we are convinced that more business could be done if the salesman could conscientiously feel that the value was in the goods.

The Neilson Furniture Co. Ltd.
R. L. Glover, Managing Drector.

Just what justification, if any there might have existed for the increases that were put into effect last spring and just what effect this revision of prices had upon the demand for furniture is not of much moment at the present time. The other side, however, the effect of high production on overhead and manufacturing costs in general is worth more than passing attention.

There are some manufacturers, not in the furniture field perhaps, who base their prices entirely on the demand experienced. When their goods are selling freely they ask and receive good prices, but as conditions change and business shows signs of falling off they ease their prices sufficiently to secure enough business to keep their plant going to something approaching normal. They take the stand that they are further ahead by foregoing some profits and even taking a slight loss than by maintaining prices at higher levels and have to absorb a heavier loss in high overhead and maintenance charges because of reduced output and idle equipment.

The question of price maintenance is one that may be discussed from many angles. It is an easy matter to cut prices, not much more difficult to maintain them at existing levels but extremely difficult to raise them, unless conditions are unusually favorable. This is one argument against reducing prices to any extent in order to stimulate demand and keep plants in operation. Such a procedure actually establishes a low level of values, perhaps considerably lower than manufacturing costs justly based on something approaching a normal output, yet one that tends to become more or less permanent because all efforts to establish a higher level are met with a determined sales resistance.

All this points with considerable emphasis to the necessity for bringing costs down to as low a point as possible. This means closer attention to equipment and methods, the reduction of handling time, the elimination of unnecessary handling, for this is a potent factor in production costs, and a close supervision of all phases of manufacturing. If lower selling prices would result in a strong demand for furniture reduced costs should enable prices to be lowered without imparing profits. In this connection one furniture manufacturer recently suggested that far too much attention is being given to the manufacturing end of the business and not enough to sales. If furniture men would forget all about production costs and cost reductions and concentrate on developing sales and building a market that will absorb their output at a fair price, they would be far better off.

Elsewhere in this issue will be found an interesting article which contains the suggestion that lack of knowledge on the part of both retailer and general public is largely responsible for their attitude toward furniture and furniture values. This could be corrected through educational publicity. Certain it is that the man or women who does not hesitate to pay several hundred dollars for a phonograph or four or five hundred for a piano often thinks that the same amount is a tremendous price to pay for a six piece bedroom suite or a ten piece dining room suite.

Is High Cost of Furniture Really High?

What is Basis for Comparing Furniture Values?—Do Furniture Manufacturers Control the Situation?—Sentimental Appeal a Strong Feature

By Irving J. Brown

Brown! Why does furniture cost so much?" A friend of mine asked me that question going down on the train one morning. It was a natural question too. Most everyone wonders just why furniture does cost so much.

"Mac," I replied. "Furniture is about the cheapest article on the market. Compare any other commodity with furniture. Think of the length of the life, the utility, and the workmanship used to build furniture compared with a suit of clothes or a lady's dress or an automobile.

"Suppose you tried to buy a good suit of clothes for $100.00, and you can. The suit will last you two years at the most. Now take another $100.00 and buy a fine piece of furniture, such as a chair or table or desk—how long do you expect it to last? Years and years.

Performs a Definite Service

Another thing. A retail furniture store is sort of a public museum. The little store in Evanston that I am interested in carries furniture made by about eighty factories. Suppose you were to attempt to visit eighty factories—how much would it cost you?

"Retail furniture stores are merely distributors for factories. They gather merchandise here and there and carry a stock that they gamble will meet the approval of their particular community. Sometimes they guess right and often they guess wrong.

"When a dealer guesses wrong—he marks the goods at cost immediately upon finding out he is wrong. That is, he does, if he is a good merchant. It becomes obvious then that in order to make up for the poor guess he must get a legitimate margin on the merchandise he guessed right on."

That consumer was convinced. But a furniture man does not always get such a good opportunity to explain just why furniture must carry a margin above the factory invoice.

Before I had any practical experience in the retail end of the business I labored under the impression that all retailers were naturally a bunch of burglars. When I heard about how buyers would beat down the factory prices—force discounts here and there and demand all manner of favors, I thought they were a lot of factory wreckers. Dealers are at the mercy of the manufacturers, but manufacturers can't realize it.

Manufacturers Establish Own Values

In the manufacturing business you hear a continual wail about "cut-throat competition," of how dealers take advantage of every little price, and of how they "fall for specials." That is a bad situation and one which manufacturers through their trade associations only can correct.

The fact is dealers don't know values, relatively speaking. They have no idea of how to compare one chair with another, or one manufacturer's cedar chest with another. The only way they can get an exact idea of the relative cost of competitive manufacturers is to systematically classify every piece of furniture he buys. In order to do that he would have to clip catalogs and compare the competitive designs of various manufacturers in the same class. For instance, a dealer might compare all Windsor chairs with the same class of finish and practically the same design. He might compare all the plain cedar chests according to size of various factories, but still, would he really know the value.

If you place two pieces of furniture side by side on the floor, one well constructed, but poorly designed, and the other well designed, but poorly constructed, the design will sell ten to one over the construction. But good construction is what makes good friends for retail dealers. Therefore, the two elements must be considered in buying.

Dealers Want Furniture That Sells

There are a number of factories in the country that do not have competition. They are always busy. They spend their thought on merchandising. They build furniture that sells—not on price but on appearance, finish and construction. Dealers want that kind of furniture. Discounts do not mean anything to a dealer if the merchandise moves.

One of the most disagreeable features of the retail business is the continual breakage of furniture that has been poorly crated. It seems that some manufacturers think every dealer maintains a cabinet room just to make over broken merchandise. Many stores do. But the vast army of small dealers cannot.

Appeal to Sentiment and Interest

Perhaps the most common error on the part of manufacturers to help resell their products is to eliminate all descriptions of the individual pieces. The story of why a certain design was used is left to the retailer. And more times than not the retailer does not bother with it either—he just calls it a number and lets it go at that. But suppose the dealer had something special to say about each piece of furniture. Could he not sell more merchandise? The public likes to know about the history of each piece of furniture. They want something in turn to talk about to their friends. A piece of furniture with a good story about it always sells rapidly from our floors.

There is no way that furniture can be sold at a less cost to the public. Price should not enter into the selecting of furniture. What the particular piece of furniture is going to be used for, where it is going to be placed, and how it will fit into the general scheme of things is the idea that should predominate in the mind of the consumer.

Manufacturers should be careful to make shipments when they are promised, for furniture dealers are depending upon the orders they place and when it becomes necessary for them to fill in from other sources and both shipments come at the same time, it causes, in many cases, a financial catastrophe.—Machinery Methods.

1835 — 1862 — 1907

Furniture Family for Three Generations

From Slow Hand Methods to Modern Production Equipment—Output Confined to Six Suites in Three Woods—Advertising and Merchandising Campaign to Develop Permanent Market

It would indeed be interesting to be able to follow the development of the Gibbard Furniture Co., Limited, Napanee, Ont., from its humble beginning in 1835 up to the present day. If that were possible one would secure a comprehensive insight into the development of woodworking methods and equipment, and a picture of the gradual growth and expansion of the Canadian furniture industry.

In the year 1835, shortly before Victoria the Good, ascended the throne, John Gibbard opened up a small shop at Napanee, Ont., and started in to manufacture fanning mills, coffins and furniture. Little, if any, equipment was available in those days, necessitating that all the work be done by hand, a slow and laborious process. Perhaps in response to a natural bent on inclination or, perhaps, in an effort to meet the requirements of the early pioneers, the production of furniture gradually assumed larger proportions to the exclusion of other lines until finally furniture became the sole output. This business was carried on until 1862 when W. T. Gibbard was taken into partnership and the name changed to J. Gibbard & Son.

Determination Wins Out Against Odds

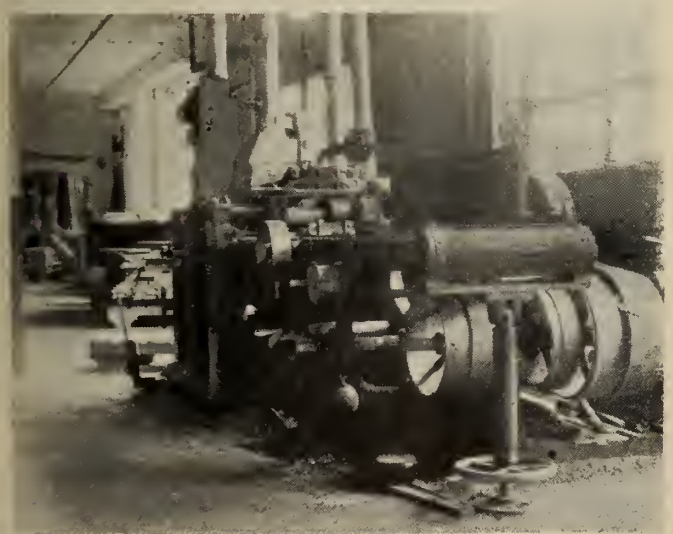
A description of those early struggles, of the discouragements faced and of the obstacles met and overcome would indeed make an inspiring story. Three times between 1862 and 1892 the plant was visited by fire, on each occasion both the factory and stock were practically wiped out. As little insurance was carried this meant a new beginning and a renewal of the early struggle. After the third and last fire, which occurred in the fall of '91, the Gibbard Furniture Co., Limited was organized as a joint stock company and a brick building, which forms part of the present plant, constructed. W. T. Gibbard was in charge of the affairs of the new organization, a position he filled until his retirement in 1907.

G. W. Gibbard took over the reigns of management upon the retirement of his father and has been successful in keeping his organization to the forefront in the Canadian field. In 1913 he bought the stock of the other shareholders, taking over the business and has since been in full control. Associated with him at the present time are J. H. Moffat, factory manager and Jack McPherson, sales manager.

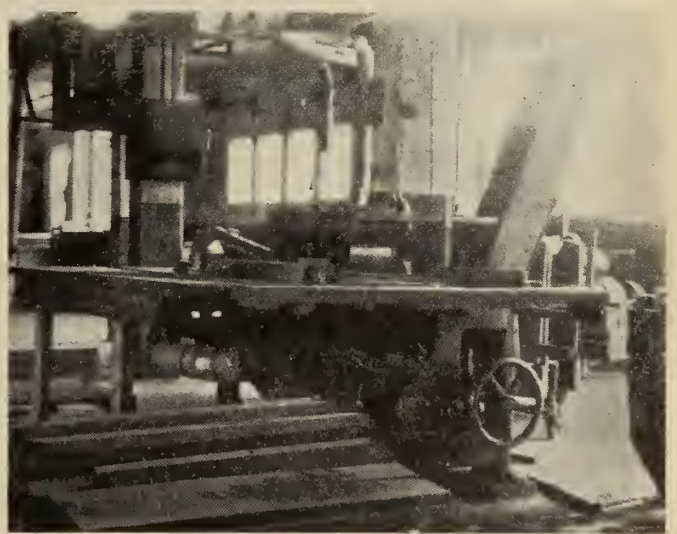
In an organization such as this, dating back as it does to 1835, one would naturally expect to find a number of employees who had put in many years of faithful service. The list is an interesting one and speaks well for the treatment afforded, and for the spirit which pervades the organization. Even today it is, "How are you Jim?" "Good morning George." H. E. Loucks, foreman of the machine department joined the staff in 1873 and has put in 50 years of continuous service. He heads the list. Two others have been with the company 46 years, three thirty years, and 14 over twenty years. In addition there are a number of workmen who have put in between twenty and fifteen years but their records are not unbroken for they have worked in other plants for various periods and at different times.

During the past few years many improvements have been made, additions built and the work of the various departments coordinated and the whole welded into a modern production organization. Whereas formerly owing to the way the plant was divided and laid out, considerable effort was expended in getting the work to and from the various machines and departments. Today the departments and equipment have been rearranged so that the work flows along smoothly from rough stock to shipping floor with little wasted effort or unnecessary back-tracking and trucking.

The present practice is to issue factory orders at



Preston ball-bearing sticker with hopper feed attachment for handling short stock



C. M. C. straight edging saw fitted with wood sub-table and special sizing gauge

the first of each month, covering a month's machine work. This gives those in this department a definite amount of work to put through in a given time and tends for uniform production from month to month. The workmen realize that as the end of the month approaches an extra effort must be made to complete any orders on which they seem to be behind. The same applies to the cabinet and assembling department where the work is put through on the same

View of Preston beltless swing saw with motor mounted at lower end of frame

monthly basis. Work in the finishing room is to a certain extent dependent on the orders received, rather than being amenable to a definite schedule. This is so because part of the stock is held for special finishes.

At the present time two compartments are being added to their kiln and other changes being made in the yard. When completed a certain proportion of lumber will be carried on kiln trucks. After drying the lumber is placed on the dry storage trucks which are inside the factory proper. As required, cars of stock are run on the lumber lift that has been installed behind the swing saw, which, by the way, is a Preston beltless swing cut-off, and the whole load lowered until the top of the car is level with the saw table. This lumber elevator is saving the wages of one man and in addition space is conserved for the car of stock may thus be placed within a few feet of the saw table.

Moulder Used to Good Advantage

Most of the lumber used is of the lower grades. The experience of the Gibbard company is that by exercising care in cutting this material it can be worked up with very little waste. There is a standing order for six foot lengths for side rails for beds. Aside from this practice is to cut all the long lengths first. With this in mind the saw operator arranges his cutting orders so that the longer lengths come up first and then the shorted pieces are cut out. This practice, together with the care the operator exercises, has resulted in a low percentage of waste cuttings.

From the saw the stock goes to a roughing planer and then to a C.M.C. chain feed rip saw. From here on the work divides depending on succeeding operations. Jointed stock is passed through the automatic glue jointer and then to the Taylor Clamp carrier. After the glue joints have dried thoroughly the wide pieces are surfaced on a Yates cabinet planer.

One of the recent installations is a 12 in. Preston ball-bearing moulder with hopper feed and equipped with round heads carrying high speed knives. A wide variety of work is put through this machine, in fact it takes care of practically all surfacing and sizing up to its full capacity. In this way this moulder is used to its best advantage. Such stock as table leaves, side rails, drawer fronts and other similar pieces are surfaced two sides and edged to width once through the moulder. Provision has been made for attaching shaped moulding knives to the round heads, so that beading, moulding or rabbetting may be done at the same time the stock is being sized and dressed. Extremely smooth work is secured, due to lack of play in the ball bearings and because the knives in the various heads are kept sharp and are jointed at frequent intervals. In addition considerable time is saved by grinding the knives without removing them from the heads. A Stockbridge grinder takes care of this, as well as being used for grinding the knives on the planer and buzz-planer.

Individual and Group Drive Used

The plant is completely motor driven, both individual and group drive being employed. In addition they are so situated and equipped that when a sufficient head of water is available in the stream that flows under the factory, they can switch of the main group drives onto a water turbine and run on water power. At the present time electric current is purchased from the Hydro but there is a possibility that at some future date a steam generating plant will be installed.

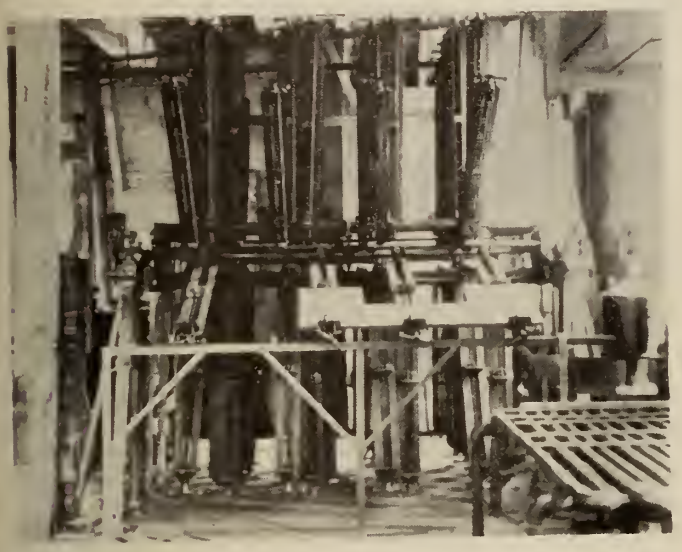
The equipment is admirably suited to the lines manufactured. In addition to the machines already referred to other recent installations include a Mattison motor driven belt sander, a Fisher sander and an Advance shaper with built in motor. In the latter machine the power is transmitted to the spindles through friction drives. At noon, for instance, when the friction drives have been released and the current cut off, the motor arbor carrying the friction plates

Mattison motor driven belt sander in Gibbard plant

continue to revolve from forty-five to sixty minutes, giving an indication of how near frictionless ball bearings really are.

The cabinet department is replete with special clamps and other devices that tend for high productiveness. The pneumatic clamp shown in one of the illustrations is one of the three that are in operation.

Directly above this clamp will be seen an electric screw driver. There are a number of these in the assembling department. As far as possible they are hung conveniently to the clamp or bench operator so that they may be used without any lost time. The



This Taylor clamp carrier gave increased output and lower costs in gluing department

screws used are the Robertson recessed head type, which have proved themselves especially adapted for power driving. In the cabinet department as well as in the other departments of the plant a large part of the trucking is handled on lift trucks. At present five of these trucks are in use in different setcions of the plant. These are the well known Chapman lift trucks.

Special Merchandising Plan

At present the furniture manufactured consists of three bedroom suites in walnut and mahogany and three dining room suites in walnut, mahogany and oak. These are made in solid wood only, in keeping

Compressed air clamp for quick work. Note electric screw driver in convenient position above

with their advertising campaign featuring Gibbard guaranteed solid walnut, solid oak or solid mahogany. Of the three woods walnut is in the strongest demand, followed by mahogany and oak. This company is gradually working toward distinctive, individual designs in solid wood that will have the same charm and sentimental appeal as the solid walnut and mahogany heirlooms that are so prized in many homes. The idea is undoubtedly a good one. There is a strong appeal to that term "solid." The home lover when referring to certain pieces of furniture lingers on and emphasizes the word "solid." Attractively designed furniture in solid wood, furniture that is dependable, strongly constructed and well finished will undoubtedly always command a ready sale at satisfactory prices.

Of unusual interest is the advertising and merchandising campaign that has been conducted for some two years by this enterprising firm. The outstanding features of this sales plan are too well known to those in the furniture industry to require further elaboration. Through consumer advertising in the daily press an attempt has been made to create a demand and develop a permanent market for "Gibbard Guaranteed Solid Furniture." What has been the result? Has this investment in publicity been a profitable one? It is not human nature to continue to spend good hard earned dollars year after year on a venture or campaign that is not proving profitable. The best reply to the above questions is to be found in the fact that this advertising campaign has been carried along without let-up and that plans are now being perfected for a more effective merchandising campaign for 1924.

Steel Belts for Transmitting Power

A comparatively new method in transmitting power has recently come to the attention of the wood manufacturing industry in the use of all steel power belts.

The new endless belt is made of a superior grade of special steel containing no joints, or welds and is an absolutely continuous steel band. The pulleys upon which the steel belts run are faced with cork which offers great adhesion to the steel belt. Steel belts are said to have no internal friction and may be run at very high or very low speeds. They are free from jar and vibration to machinery due to absence of joints of all kinds and may be run equally well on long drives, very short ones and on vertical drives. Due to higher speeds being desirable in steel belts larger diameter pulleys may be used, which in turn relieves the pull on the bearing. This also permits smaller framed motors to be used, causing a saving in motor cost.

Another advantage, which it is stated that steel belts possess, is greater economy of space since these belts are from 25% to 40% as wide as equivalent 2-ply leather belts. It is claimed that the pulleys are narrower and lighter, reducing friction, inertia and expense. Practically no stretch or shrinkage occurs with temperature and moisture changes, and the steel belt requires no adjustment due to itself.

Before you buy a small machine weigh up the possibilities of how soon you will require a larger one. You can work small stuff in a large machine but you cannot work large stuff in a small machine.

Before you take the cutters off the machine after it has done a run of mouldings outline their position on a thin piece of wood, then tie the cutters to it, so that it will do for the next run.

Electric Power—How to Use it

Total Connected Load is Factor in Running up Power Costs—How one Wood-Worker Guards Against High Power Bill—Economies May be Effected in Other Ways

By A. W. Williams

A great deal has been written on the subject of electric drives, and most of the material I have read has lauded this form of power to the skies. It is good, but many users pay a great deal more for power than is necessary because they have not studied their requirements carefully. I have frequently heard electric power users in the woodworking industry calling the power barons naughty names.

There are motor driven enthusiasts who will consider nothing but individual drives—a motor for every machine—sometimes three or four motors on some machines. Usually these enthusiasts are men who do not have to pay the power bills. Individual motors are a costly proposition when you provide a factor of safety on each motor to be sure of the machine having ample power under all conditions. You pay for the connected load, meaning the total horse-power that is connected to the power company's wires. This is quite fair as it is obvious that you can use that amount of power if you wish and the power company has no other course but to be prepared to deliver that much current when required and to assume that you use that amount of power—occasionally at least—or you would not have that much connected.

Group Drive for Intermittent Operation

There are times when individual drives are economical, as well as efficient. I have reference to a plant where all machines are operated to capacity all of the time. It is plain that you have the work for the machines to do, it is a piece of folly to try and skimp on the power. But there are not many plants where every machine in each department is operated to capacity all of the time. I think a canvass of users of electric power would show that group drives have proved to be the best for the woodworker. He may use individual motors on his principal machines, the ones that are operating to capacity all of the time, and group several of the machines that are used only intermittently and operate the latter with one motor for the group.

A friend of mine who is superintendent of a piano factory showed me a circular letter a day or two ago which he had just received from a machinery manufacturer. It was accompanied by a circular describing an interesting operation done on a particular machine, and the letter told how the machine was equipped with a direct connected five horse power motor. I have no criticism to make of either the machine or the motor except to say that at least ninety per cent. of the work that machine would be called on to do in a piano factory would require only three horsepower. Therefore with an individual motor the owner would be paying for two horsepower more than is necessary. It may be a small item but if the same surplus is maintained all the way through his factory he may be paying one hundred dollars a month more than he needs to for power.

The particular machine I have used as an example is one that is not always in use. If one of a group of occasionally used machines driven by one motor it could draw its five horse power when necessary, because all of the machines would not be operating at the one time.

Basis for Power Charges

So much for the kind of drive. The charge for power service—I am speaking of the power furnished by the Hydro Electric Power Commission of Ontario consists of a service rate plus consumption or kilowatt hour rates. The service rate is $1.00 per month per horse power of connected load or maximum demand. The consumption rates are:

First: For all consumption up to first fifty hours monthly use of the load.

Second: For all additional consumption up to the next fifty hours monthly use.

Third: For all remaining consumption.

These consumption rates vary in the different municipalities, but I have prepared a table of the rates in some of the woodworking centres of Ontario from the latest available Hydro Electric Power Commission's annual report. There may be a slight difference in the current rates in some of the places named, but one of the Hydro officials assures me it will only be a matter of a fraction of a cent in any event.

	1st 50 hrs. per month per kw. hr.	2nd 50 hrs. per month per kw. hr.	all additional per kw. hr.	prompt payment discount
Elora	3.2	2.1	.15	10%
Ford City	3.5	2.3	.15	10
Galt	2.0	1.33	.167	25 & 10
Goderich	4.5	3.0	.15	10
Guelph	1.467	1.0	.133	25 & 10
Hamilton	1.43	1.0	.143	30 & 10
Hanover	3.3	2.2	.15	10
Hespeler	2.11	1.39	.167	10 & 10
Kingston	2.5	1.7	.15	10
Listowel	3.8	2.5	.15	10
London	1.867	1.267	.16	25 & 10
Midland	2.0	1.4	.15	10
Milverton	3.3	2.2	.15	10
Ottawa	1.8	1.2	.15	15 & 10
Owen Sound	2.	1.4	.15	10
Peterboro	1.3	.8	.1	10
Preston	1.67	1.11	.133	10 & 10
Sarnia	3.5	2.3	.15	10
St. Catharines	1.6	1.066	.16	25 & 10
St. Mary's	3.1	2.1	.15	10
Stratford	2.5	1.7	.15	10
Strathroy	3.6	2.4	.15	10
Toronto	1.5	.75	.4	10
Walkerville	3.5	2.3	.15	10
Waterloo	1.67	1.11	.133	10 & 10
Welland	1.73	1.13	.147	25 & 10
Woodstock	1.867	1.267	.16	25 & 10

A power bill, say for Toronto, if the connected load is 100 H.P. and the meter reads 800 K.W.H's, would be as follows:

Service charge 100 H.P. at	$1.00	$100.00
3730 K.W.H. at	1.5c	55.95
3730 K.W.H. at	1.75c	27.98
540 K.W.H. at	0.4c	2.16
		$186.09

Power is sold in various classes, A.B.C.D., etc. A is 24-hour unrestricted use, B 24-hour restricted use, C 10-hour unrestricted use and so on. Class C is the class we are interested in, and for which the above bill is an example.

When a power consumer so desires, a suitable demand meter may be installed. He will be charged the cost of installation, not including the cost of the

meter, and an annual rental of 15 per cent. on its cost, in addition to the cost of maintenance. When a demand meter is installed the demand for any month will be taken as the highest average for any ten consecutive minutes, during the month. Where one of these meters is installed the customer is not compelled to pay the service charge on the connected load, but on the greatest load shown on the meter for any consecutive ten minutes during the month. One of these meters is an interesting thing to watch. There are two hands on it, a black hand and a red hand. The red hand travels with the black one as it registers the load. If the load is sustained for ten minutes the red hand stays there. If the black one goes up again and passes the point where the red one stayed, the red one goes on again and tries to stick at another notch for ten minutes.

How One Woodworker Conserves Power

The writer was talking to the owner of a woodworking plant a few days ago who has one of these meters. He said he had been out in the plant for something and saw the red hand climbing steadily. He watched it for a minute or two and then took a glance around to see if he could locate the machine responsible for the load. Picking out the one he thought it was he told the operator to stop for a minute. When he stopped the fatal red hand dropped back. The owner laughed when telling about it and said he knew the man would be finished the job he was on in another five minutes, so he thought he might as well make the red hand start over again on its ten minute objective.

With one of these meters it is possible to exercise a little economy. For instance the plant owner referred to above has three stickers in his plant and he issued instructions to his men that the three stickers were not to be in operation at the same time as several other machines in the mill. Then they have a lumber hoist for carrying lumber to an upper floor. Care is used in the operation of this hoist so that its use does not coincide with the peak load on the machines.

No rules can be given for the conserving of power, but the big thing to keep in mind is to keep the peak load down to the minimum when the power is metered by a demand meter. Each plant owner will have to study his own equipment and operations to see if a little rearrangement can be offered that will cut down the power bill.

Economies in Other Directions

An interesting article entitled, "Lights for the Scrubwomen," appeared in one of the business magazines. It told how the New York Edison Company showed its patrons—the owners of large office buildings—how they could have a pile of money in the lighting of their buildings by cutting down the lighting at nights when the cleaners were in charge. It was a common habit for these cleaners to have all the lights in a building turned on while they were only working on one floor. Another source of waste was in having all the lights in an office turned on in the day time when the only ones required were those furthest from the windows. By practising economy and re-arranging some of the switch panels one firm cut their bill by 20 per cent., from forty thousand dollars a year to thirty-two thousand.

Nothing as big as that can be hoped for in a woodworking plant—at least not in figures, but the percentage might be achieved. It is worth devoting a little study to the subject.

The municipality in which the plant is located may install a demand meter without consulting the customer if they wish. If they do so there is no additional charge to the consumer, that is for rental of the meter.

Penalty for High Connected Load

One clause that appears in the rates of the Hydro Commission that may not be quite clear to the average consumer is this: "Wherever a demand meter is installed the monthly bill shall be subject to power factor correction, as specified in the contract. The minimum power factor when operating the consumer's maximum load shall be 80 per cent. for loads up to 10 H.P., 85% for over 10 H.P. and up to 100 H.P., and 90% for loads over 100 H.P. Records from the demand meter shall be taken each month at the same time as the watt-hour meter is read."

"Power factor" is something that is rather difficult to explain. It has to do with such a thing as having a five horse power motor connected and never using more than three horse power. The power company penalizes a customer for that, by charging for 80 per cent. of the connected five horse power load. That is the interpretation of the 80%, for loads up to 10 H.P., 85% for over 10 H.P. and up to 100 H.P., and 90% for loads over 100 H.P. mentioned in the clause quoted above. That is called power factor correction, or in other words a penalty.

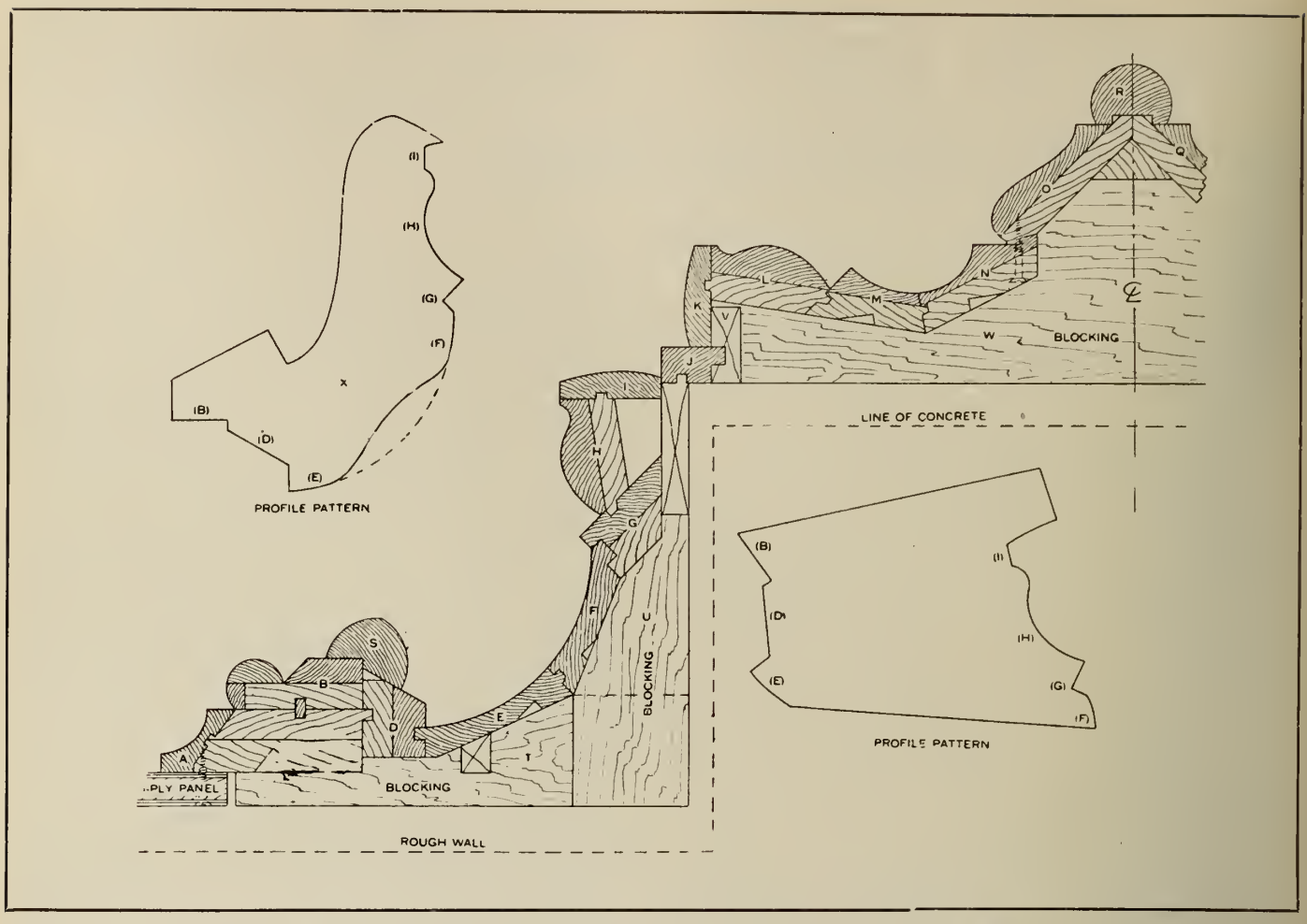
There are special rates for some intermittent loads, such as air compressor motors; wherever such intermittent load is greater than twenty-five per cent. of the sustained demand there will be a service charge based on the total rated capacity plus the standard consumption charge. That is, when the consumer is billed on installed capacity, the rated capacity of the intermittent load will be added to the rated capacities of the other equipment installed. Where the demand is measured the highest load for ten consecutive minutes as described before is taken.

The service charge for platform elevator motors having intermittent ratings will be based on fifty per cent. of their total rating where the demand is not measured. If the demand is measured the greatest load for ten minutes applies.

Forest Products Laboratory Courses

Enrollments are now being received at the Forest Products Laboratory, Madison, Wisconsin, for the December group of the instructional courses which are given at regular intervals by the Laboratory. Five courses will be given. These include the Kiln Drying of Lumber, which has previously been given to 31 classes, totaling 370 individuals from all parts of the country; Boxing and Crating, given 20 times to 184 representatives; Glueing of Wood, 6 classes with a total enrollment of 55; Wood Properties and Uses (formerly called the Lumber Salesmen's course), 3 classes with 23 individuals. The fifth course, Wood as a Building Material, is a new one designed particularly for architects, construction engineers and contractors.

All of the courses, with the exception of the new one, will begin December 3. Classes in Wood as a Building Material will begin on December 10 and continue through the week.



How Would You Run This Moulding?

Huge Moulding 58 by 22 Inches Presents Many Interesting Problems—How This was Handled in a Chicago Plant—Provision for Clamping Important Factor

In factories that produce high-grade millwork it is not particularly uncommon to get out moldings that are composed of two, three and even four members; seldom does anything larger or more elaborate come along. Built-up moldings of the character and size that the average mill manufacturers, however, dwindle into significance compared to some of those manufactured by the West Woodworking Co., of Chicago, Ill., for ornamentation of the 50x100 ft. auditorium in Chicago's new sky-scraper, the Temple building.

Picture in your mind, if you can, a molding 58½-in. wide and 22-in. high, composed of no less than 37 machine-run members, 31 of which show on the face. Huge built-up moldings of this size, form the massive ornamental pilasters along the sides of the immense auditorium, the beam finish under the balcony and the great overhead Gothic arches that span the width of the auditorium. Many other elaborate moldings almost equaling them in size and number of members, are employed as trim around the entrances, the balcony and the stage.

The division of these giant moldings into small members that could be run on ordinary molders from standard size material, the assembly of the members into correct profile, the fastening of the joints and the bracing of the huge shell-like structures, calls for the highest knowledge and skill in woodworking. A typical half-section of the working detail for molded pilasters appears herewith. This drawing shows the points of division of members, the joints between members, the two-ply construction of many of the members and the relative location of some glue blocks and back braces. Closely-shaded portions identify the oak face wood, while light shading shows the back piles or parts which are made of chestnut. Diagonal lines indicate cross sections of glue blocks and separate back members that serve to reinforce the shell. Additional reinforcement is provided by back blocking that runs crosswise of the molding at intervals of 20-in.

The machine work on this molding was not unusual except in that it had to be extremely accurate in profile, dimensions and fitting of joints. Some of the members, of course, called for the making of new knives to cut certain special curves. However, close examination of the drawing reveals the fact that although the line of molding makes many angles and turns, there is not one member that must be cut with a tilted side head—thanks to the planning of the factory detailer. All two-ply members were glued together before being molded.

Molder work was followed by the assembly of unit parts. For example, the separately run pieces A, B, and D were glued together to form one unit, E and F formed another, G, H and I made a third, and so on. This unit assembly was determined largely by convenience in gluing single members together. To permit the use of clamps for drawing members and units into close union at tongue-and-groove joints, the backs of some members were V-grooved, as in the case of C, E, F, M and N, while some were fitted with glue blocks as shown at E to form lugs for the jaws of clamps. Each unit assembly was checked for accuracy of profile, by face patterns made of three-ply material ½-in. thick. At Z there appears a typical double-end pattern that has one end scroll-sawed to fit over the exposed faces of members D and part of B and E, while the other end is sawed to fit over G and H and part of F and I.

After the assembly of small units composed of two to four members, there followed more complete assembly. For example, units ABCD, EF and GHI were glued together and tested by a face pattern extending from the middle of face B past the near edge of I—see outline at X. This quarter of the mold and the quarter that corresponds to it on the other side of the center line, is reinforced and held in shape by back braces that form an angle of 90-degs. and run crosswise as indicated by letters T and U. These cross braces are located at intervals of 20-in. apart. Near the ends where the blocking is narrow it is nailed or screwed to the back of the molding, but where it is too wide to be nailed or screwed, it is glue-blocked on both sides to each member of the molding.

The central section, half of which is formed by members K, L, M, N and O, is put together first by units and then completely assembled or reinforced with cross braces like W, set at intervals of 20-in. The joint between members O and Q is reinforced with glue blocks set in the corner, and the joint between N and O is strengthened with wood screws set through N into O. Members M and N have V-grooves in their backs, like E and F, to make square shoulders for receiving the jaws of clamps that are used to draw them together.

The points of division between the edges of center section KLM, etc., and the two built-up parts that join it, are between members J and K on the half shown herewith and between corresponding members on the right-hand half which does not appear in the drawing. This joint is reinforced by a grooved backing strip, V, which is glued in place before cross braces like W are positioned. Corner beads R and S are last members to be applied.—The Wood-Worker, Indianapolis.

General view of plant of Satin Finish Hardwood Flooring, Limited, Weston, Ont.

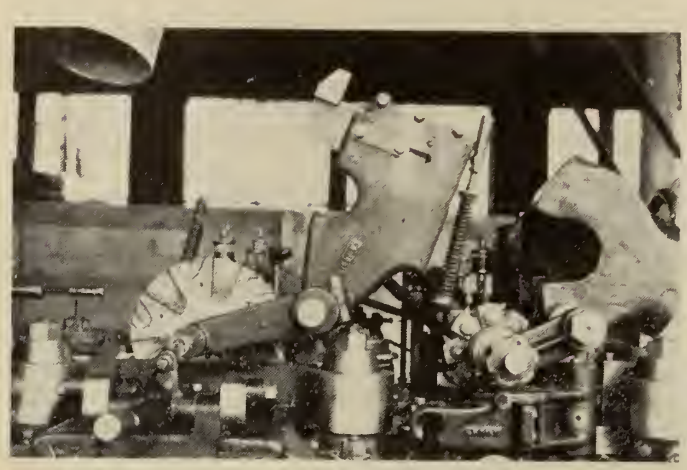
Hardwood Flooring at 175 Feet a Minute

Disc Head Matcher Carries Fast Feed — Special Head Eliminates Knife Marks Resulting in Smooth, Satin Finish—Outline of How Work is Handled with Minimum of Labor

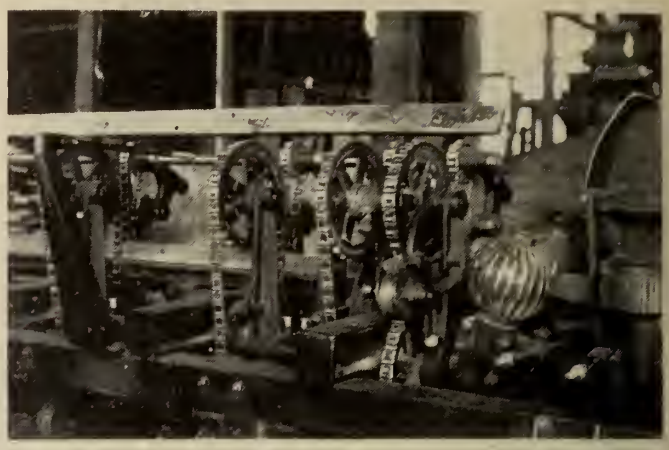
In selecting a name under which to operate, the Satin Finish Flooring Limited, Weston, Ont., apparently made a very apt choice for they have been able to tie this name in as their trade mark, and as the registered name of their brand of hardwood flooring. Not only that, but the term "Satin-Finish" describes an extremely desirable quality for flooring strips, a quality that this new organization has been at pains to attain and maintain.

Very often a newcomer in any manufacturing field has certain definite advantages over some of the older and well established concerns. These have to do with plant and method more than and other phase of organization activity and apply particularly where a new plant and new equipment is part of the initial program of the new organization. The reason for this is not far to seek, for such an organization is able to profit by the experience and mistakes of its individual members, as well as by the experience and mistakes of the old established companies and in addition is in a position to select the modern types of equipment that are best adapted to the lines to be manufactured.

Sometimes because of lack of capital or because of a short-sighted, pinch-penny policy, a company about to equip a plant will often shop around and pick up at bargain prices a lot of old, secondhand equipment that should have been scrapped instead of offered for re-sale. This must not be taken as a condemnation of the practice of buying used equipment, for many of the most modern machines can be picked up secondhand, but it a strong condemnation of the



Showing disc head, top matcher head and three feed rolls. Hoods also act as hold-downs

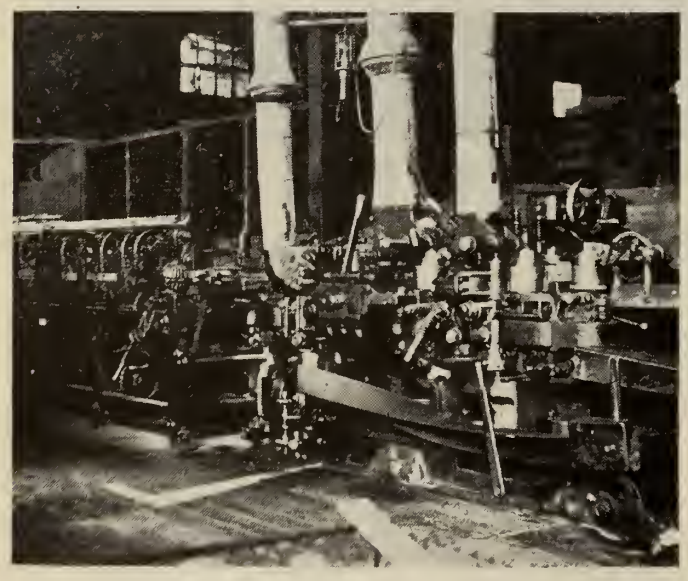


Spherical feed roll carries strips into machine. Note how chains are grouped for short pieces

practice of permitting price to dictate the buying policy instead of installing equipment that will produce the desired quality of work upon a basis that will result in lower production costs, almost without regard to the initial price of such machines. When old, secondhand machines are bought, instead of being able to overcome the handicap of lack of an established market and the sales inertia which is encountered in the marketing of any new line, by a high class product turned out under methods and with equipment that result in high productiveness and low costs, a new company is handicapped at the very start by the old equipment with which they have surrounded themselves.

Quality of Product Carefully Watched

When the Satin Finish Flooring, Limited was organized and about to equip a plant, their first consideration was the market for their line. Many



General view of Yates disc head hardwood flooring machine

woodworkers are manufacturing hardwood flooring, some of them turning out stock of which they have every reason to be proud. What then could this new concern offer in the way of hardwood flooring that would immediately command attention and assure a demand for their brand almost from the very start? They had only the same woods with which to work, there was not much chance for improved grades, so that the answer was a better manufactured product, if that were possible; well matched flooring with a smooth satin-like surface.

Having such a definite goal in view they set out to secure equipment that would enable them to attain this result. After a careful investigation of all available machines they decided that the new Yates A7 hardwood flooring machine with the vertical disc head would enable them to approach more nearly the ideal they had in mind. Their conclusion in this respect is questioned by operators of other types of equipment but they followed the dictates of their own judgment and installed Yates hardwood flooring equipment. At the present time they are producing smooth, well-matched hardwood flooring at the rate of 175 lineal feet a minute, or about 13,000 feet in a day's run.

Stock Progresses From Machine

The lumber is piled on kiln trucks as it is unloaded from the railroad cars and is kept on green storage trucks until placed in the kiln. Drying is accomplished in an unusually short time in their National Moistat kiln, oak containing twenty-five per cent. moisture being reduced to five per cent. in four days. (This feature is outlined at length elsewhere in this issue). From the kilns the dry stock is run into the dry storage shed and then as required is spotted behind a Yates gang rip saw.

The adjustable saws on this machine are so arranged on the spindle that with one pass through the gang saw each board is cut into strips of various combinations of widths so that full advantage is taken of every board and the waste reduced to a minimum. Behind the gang rip saw is a chain conveyor which carries the strips to a Yates band resaw. Most of the trimming is done prior to resawing as otherwise there would be two pieces to handle instead of one. The stock is trimmed closely for knots, cross grain, and bad ends. This tends to prevent delays in running the flooring, as the breaking or jamming of a piece in a flooring machine usually means that the machine must be stopped. As the thin strips leave the resaw they are placed on factory trucks and run to the flooring machine.

Conveyors Reduce Handling Costs

As the manufactured flooring leaves the matcher a belt conveyor carries it to the first of a pair of Yates combination end-matchers and trimmers. One end of each piece is trimmed and end-matched as it passes through this machine. Upon emerging at the

other side the strips drop on another belt conveyor which carries them to the second machine which trims and end matches the other end. A third belt conveyor carries the finished pieces to the sorting table where the flooring is graded, sorted into lengths, and bundled.

This plant is electrically driven throughout, most of the machines having individual motors. For the large flooring machine a 60 H.P. motor is used. Practically all the motors are Westinghouse, and many of them are direct connected to the machines they drive.

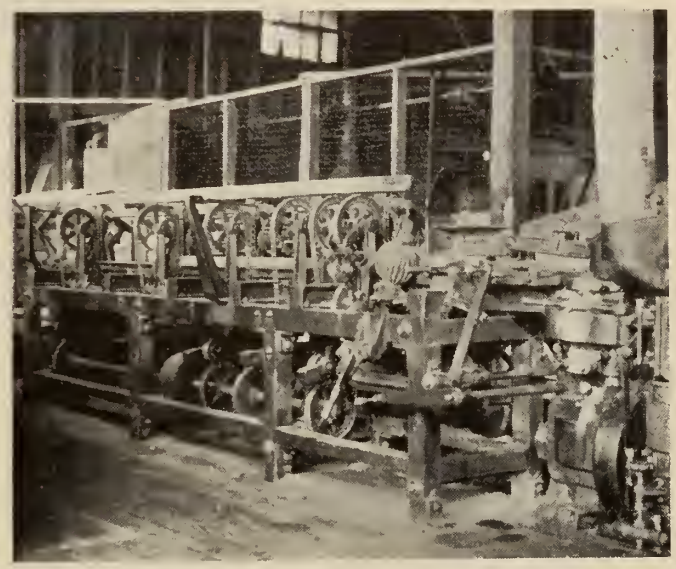
Details of Disc Head Matcher

Embodied in the Yates disc head hardwood flooring machine are a number of new and interesting features. Some of these are shown on the accompanying illustration. The stock is run through on edge and is fed into the machine by an automatic feeding table which is clearly seen in one of the accompanying illustrations. The operator stands about opposite the spherical feed rolls with his back to the flooring machine, and drops the stock between the feed chains by balancing the strips on the bracket or guide shown just back of the third feed chain. It is necessary that the end of the strips be kept far enough forward to engage the spherical feed roll.

The pieces are carried through the matcher by four pair of live feed rolls. A number of "hold-downs" are provided to keep the stock firmly in its proper place. The first cut is made by the hollow-backing head which takes care of the back or under side of the strip. Then comes the disc head which is responsible for the smooth surface, entirely free from knife marks. The two matching heads are located one above the other so that the stock passes through the opening between the rapidly revolving cutters. The trade name is embossed on the back of the stock by a plate on the outside out feed roll.

Shearing Cut Imparts Polished Finish

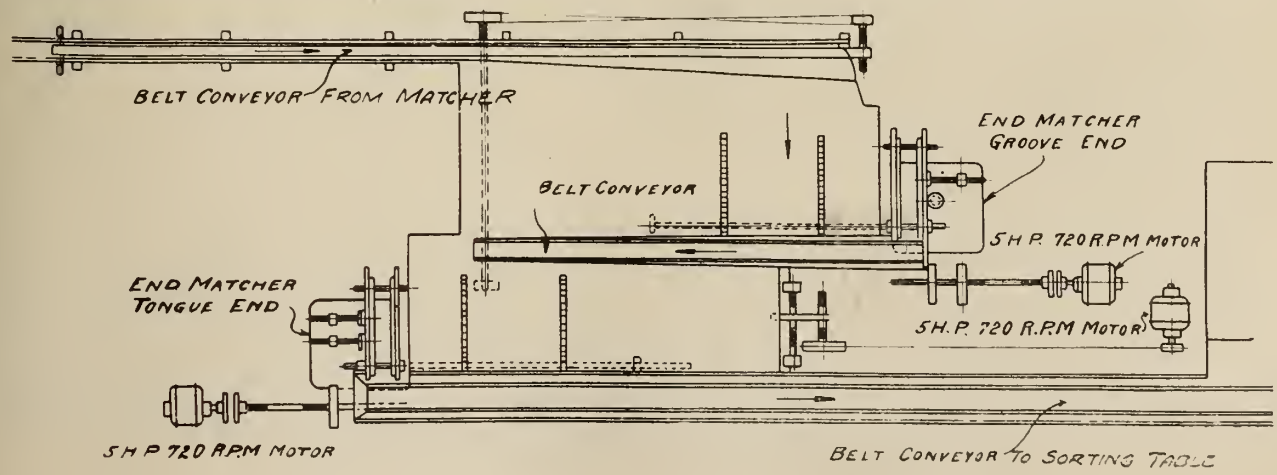
One of the close-up views shows the special disc head and the top matching head. The hoods, which are raised to show the cutters, serve to hold the stock firmly in position. There are two sets of knives on the disc head: One set of spur cutters on the outer circumference serves as roughing knives, and the straight knives on the face of the head which impart the fine finish to the flooring. These knives are accurately adjusted with special jigs so that jointing is eliminated, in face owing to the nature of the cut, a jointed knife would not work satisfactorily on this head. Provision has been made for jointing the knives and cutters on the other heads. Like any other machine, the secret of securing a well manufactured output, if secret there be, lies in keeping the cutters in good shape and exercising care and judgment in adjusting and operating the machine.



Automatic feeding table which enables operator to keep machine filled

The Satin Finish Flooring, Limited has been operating for about a year, having been incorporated in June 1922. They are manufacturing flooring in such woods as oak, birch and maple, and in the usual run of widths and thicknesses. The active executives are W. T. Cole, formerly sales manager of the Seaman-Kent Company, Toronto, and W. C. Gardener, who was at one time a member of the Builder's Moulding Company, Toronto. The product of the Satin Finish Flooring, Limited has attained a rather enviable reputation with the result that the demand is sufficient to take care of their entire output. If this continues in all probability another flooring unit will be added in the not far distant future.

Straight work and smooth cutting are two essentials to the resawing of lumber into thin sheets; and the thinner the band saw the less waste in sawdust. The thin blade, in turn, requires a sensitive straining device.



Layout of combination trimmers and end matchers including belt conveyors

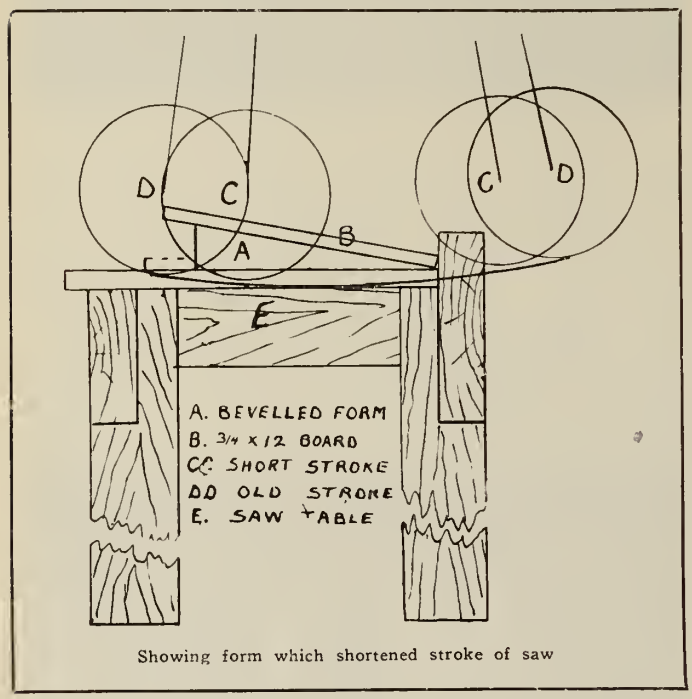
Reducing Labor at Swing Cut-off

Analysis of Cutting Operation Indicated Several Improvements—Output Increased With Less Effort on Part of Operator—Similar Opportunities at Other Machines

By M. N. Wright

Not long ago we accepted an order to cut 30,000 feet of ¾-in. x 12 into lengths of 18 in. and under. This was quite a contract as it required in the vicinity of 25,000 cuts. Before undertaking the work an analysis was made of the operation to see how it could be handled with a minimum of effort and thus secure maximum output. An outline of what was accomplished may prove helpful to other woodworkers.

First it was found that the swing saw went back three inches further than was necessary behind the fence. This little bit of lost effort or extra motion



Showing form which shortened stroke of saw

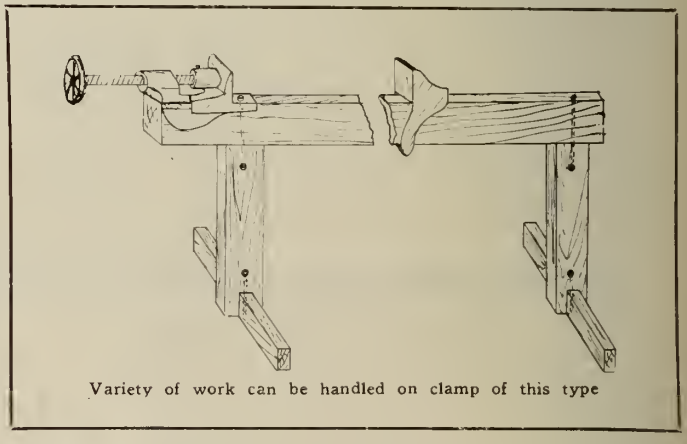
tended to increase the labor and cut down the output and so was remedied. Next, a wedge-shaped form was attached on top of the saw bench. This was two and a half inches thick on the outer edge and tapered to half inch on the inner side, that is the edge that rested against the fence. This raised the outer edge of the boards being cut two and a half inches. Further these boards being wider than the bevelled form the overhang made it easy to grasp the boards and move them forward after each cut. This in itself means a slight gain in output.

The main reason for using the bevelled form was that it shortened the saw cut. This will be seen at CC on the accompanying sketch, the actual reduction in length of stroke being four inches. This four inches added to the three gained on the back swing made a total gain of seven inches or a reduction of about one third in the saw stroke. Figuring this on the basis of the backward and forward stroke it represents a saving of approximately 15,000 feet in swing saw travel. In addition because of the lessened travel of the saw frame the overhead balance weight was reduced so that the operator benefitted in two ways, a reduced forward pull and less dead weight to lift. Another advantage gained from this change was that due to the slope of the form the stock always stayed close to the fence as it was being shoved forward for each cut, again relieving the operator and tending for still higher productiveness.

The use of this rig resulted in a clear gain or saving of from twenty-five to thirty-five per cent. in time—surely a worthwhile gain. This is the reward of a little close study and application. In this particular case the order has been duplicated several times so that the economies secured are beginning to mount to a considerable sum. While this may suggest how a saving can be effected in other plants there are doubtless many other operations that could be improved with a little time and study. If the average mechanic were always on the alert to see if he can not figure out better some way of doing the tasks allotted to him he would be laying the foundation for a better job and a larger envelope. In addition he would be ensuring the permanency of his position as he would be contributing to the prosperity of the organization on which his own position and future depends.

Handy Horse Clamps

For the small shop, where the expensive all iron clamps are out of the question, a lot of work can be got out in a satisfactory manner on a pair or horse clamps as below. They are made out of maple with



Variety of work can be handled on clamp of this type

the top bar 6 to 7 ft. long. A height of 2 ft. 6 in. high from floor would be found satisfactory for sashes, doors and general clamping, working up to stock 4 ft. wide and any length. The iron fixtures should be bought at from $5.00 to $6.00 per clamp. When not in use they can be stacked up in a corner, or better still hung on brackets which could be attached on the side of the shop wall, thus not taking up any floor room when not in use.

Drying Schedule That is Different

Short Drying Period Due to Intermittent Steaming—Relative Humidity Held Between Definite Limits—Full Advantage Taken of Natural Movement of Moisture in Wood

Practical men usually agree that it is neither wise nor profitable to sacrifice the quality of the drying to attain speed. By that is meant that the first consideration should be to turn out dry stock that is free from ordinary drying ills, such as checking, casehardening and honey combing and then to dry as fast as permissible having this prime consideration in mind. while the natural tendency at most plants seems to be to cut down the drying period as much as possible yet the condition of the stock must never be overlooked for a gain in time accomplished at the expense of the lumber does not figure out very satisfactory as a rule, for it is usually secured at rather a high price.

Elsewhere in this issue, in an article describing the plant of Satin Finish Flooring, Limited, Weston, Ont., mention is made of the fact that they are drying their oak from twenty- five per cent moisture content to five per cent in four days. This seems to be pretty fast drying even with modern types of kilns and using what might be termed a high speed schedule. Under such conditions one would not be surprised to find the drying loss to be high and the stock to be badly honeycombed for such troubles are often encountered when a much less severe schedule is followed. Such does not appear to be the case, however, as they are pleased with the condition of the material as it is removed from the kilns. It comes out straight and dry, free from warping and checking, even end-checking is not noticeable, and in other ways seems to measure up to what dry lumber should. Further there is no signs of casehardening either at the resaw or in the hardwood flooring machine which would seem to indicate that the drying stresses had been eliminated at some stage of the drying operation.

Intermittent Steaming and Drying

When asked to explain the gratifying results that were being secured, the kiln operator stated that the short drying period was due to the way in which the lumber was intermittently steamed and dried. This is carried out under the automatic control of a special regulating instrument. The stock is first subjected to a steaming period of several hours, live steam at twenty-five pounds pressure being used. After a certain point has been reached the controlling instrument closes off all the spray, so that no more steam is being admitted. As the kiln temperature is around 150 deg. to 165 deg. at the start, as soon as the sprays are closed drying commences almost immediately and increases rapidly in its severity. The result is that the moisture is drawn rapidly from the stock. When the lumber gradually ceases to give up moisture either because the surface of the lumber has been dried or because transfusion is being retarded by the dryness of the surface fibres—incipient casehardening, the relative humidity in the kiln will gradually drop because the air is not picking up as much moisture as formerly. When the relative humidity drops to a certain point, that is before the stock has been injured by the rapid drying, the controlling instrument automatically opens the spray coil full and the stock is steamed for a short period, only to be cut off again when the humidity has been built up to a certain point. This is the way it acts until the drying is completed—a steaming period followed by a period of rapid drying.

Perhaps this can be illustrated to advantage by the accompanying charts. The first chart shows the usual slow, safe drying schedule as advocated by the Forest Products Laboratory at Madison, Wis. In commercial practice this is modified as shown in the second chart. While time should not be gained at the expense of the stock, yet the drying time is an important factor, so that the drying schedule of the laboratory is speeded up to conform to the requirements of commercial and industrial drying. While the conditions maintained under the second schedule are much more severe yet they are not sufficiently severe to injure the stock to any appreciable extent. In one case the stock is not supposed to suffer at all while in the second it suffers to a permissable extent. The third chart indicates graphically the intermittent drying and steaming such as outlined above. It will be noticed that the range of wet bulb temperatures

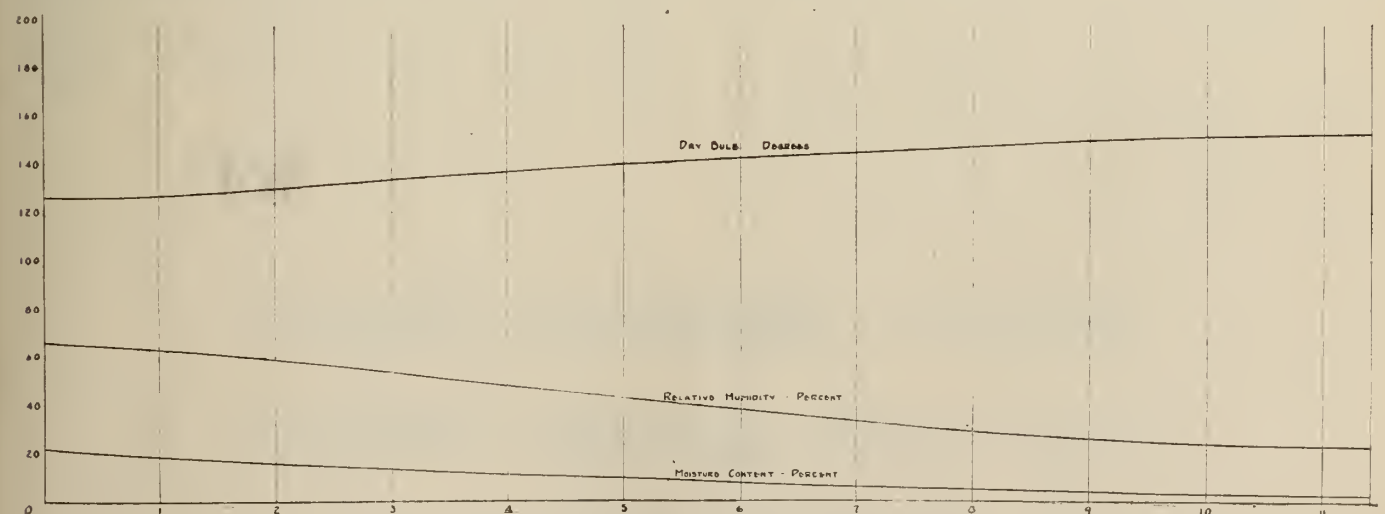
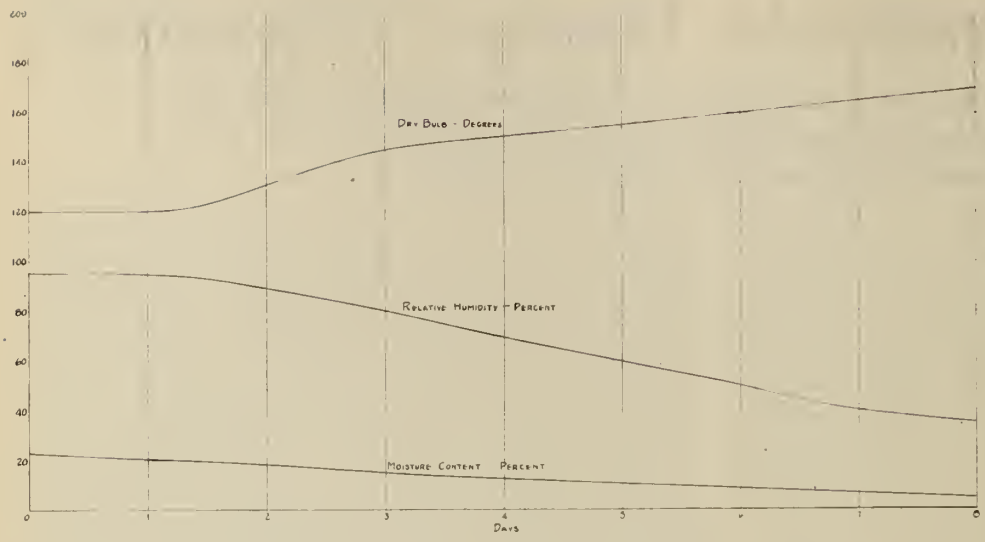


Chart showing dryng schedule advocated by Forest Products Laboratory



This indicates schedule followed at many plants

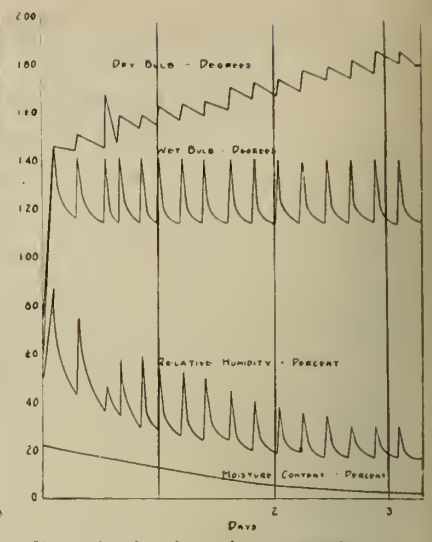


Chart showing intermittent steaming and drying schedule

is held within definite limits by the controlling instrument. The rapid drop of the moisture content curve shows how quickly the moisture is eliminated from the lumber. Often where the stock is steamed for from six to twenty-four hours there is little, if any, drying during the first twenty-four hours, here drying sets in within a few hours of the time the steam is turned on.

How Moisture Moves in Wood

It has been recognized for some time that steaming assists in the satisfactory removal of moisture from lumber. With this in mind it is often stated that frequent steaming results in a shorter drying period. The commonly accepted idea is that this steaming relieves the extreme surface dryness and mild, or even severe, casehardening so often noticeable and which materially retards the drying and thus the transfusion of moisture to the surface is re-established at a satisfactory rate.

All this is undoubtedly correct, but there is more to the success of the intermittent steaming treatment than that. Practically all drying schedules have been developed on the theory that the movement of fibre moisture is from wet to dry fibres and that by keeping the surface of the lumber dryer than the inner portions the moisture is drawn to the surface and there evaporated. This is correct to a certain extent but in addition there is a definite moisture movement from warm to cooler fibres. Keeping the outer surface hot and dry tended to check this movement and perhaps to a certain extent retarded the transfusion from wet to dry fibres. During each steaming period the temperature of the centre of the stock is raised. As soon as the steaming stops and drying commences the surface of the stock is cooled appreciably as well as dried, due to rapid surface evaporation and the result is that during the early part of each drying period the temperature of the centre of the stock is higher than that of the surface. Thus full advantage is taken of the transfusion from wet to dry fibres as well as the movement from warm to cool fibres. Thus the interior moisture is brought quickly to the surface in considerable quantities permitting unusually rapid drying. As the temperature of the stock equalizes and the movement of moisture to the surface becomes slower the relative humidity of the air drops and soon the spray is automatically opened again, the surface fibres are softened and the temperature of the centre of the lumber raised and then away to another rapid drying period.

Schedule Covering Drying Operation

It may be of interest to reproduce a report covering the drying of a run of oak, at the plant of the Satin Finish Flooring, Limited. The initial moisture content of this stock was 25 per cent. The initial drying temperature was 160 deg. while the working range of the instrument controlling the humidity or wet bulb temperature was from 130 deg. to 160 deg.

	M. C.	Wet Bulb Low	Wet Bulb High
Placed in kiln 4 P. M.	25		
End of first 24 hrs.	18	130	160
End of second 24 hrs.	18	130	160
End of third 24 hrs.	7.6	130	160
End of fourth 24 hrs.	5	130	165

Dry Bulb Low	Dry Bulb High	Length of Steaming period	Time between Steaming period	
		2 hr. 30 min.		
163	173	30 min.	14	30
165	178	25 min.	8	30
175	185	20 min.	5	15
178	186	18 min.	3	10

It will be noticed that as the stock dries the temperature of the kiln raises, also that as the drying progresses the steaming periods are shorter and occur at shorter intervals. The explanation of both these points is that as the drying progresses there is less moisture being evaporated, consequently less heat being consumed in evaporating the moisture and a lower relative humidity prevailing.

Steel Coated Plywood

A steel coated plywood known as Plymax, has recently been placed on the market by Venesta, Limited, London, England. At the recent Shipping, Engineering and Machinery Exhibition, held in London, the Venesta booth was constructed entirely of Plymax and gave some indication of the unusual rigidity of this material. Some idea of the application of this steel coated plywood and the possibilities which lie before it, may be gathered from the articles of this material which were on display. These included, a table, factory trucks, wheel trucks, disc wheels for motor cars, engine inspection door, barrels, boxes and packing cases.

Market for Wood Products in West England

Variety of Wooden Articles in Demand—Canadian Handles to be Given Severe Tests—Suggestion for Securing Better Freight Rates

Douglas S. Cole, Acting Trade Commissioner

Birmingham manufacturers of office and school supplies are in the market to purchase ruler blanks in quantity, provided quality and price are satisfactory. Apparently stocks are depleted, and the interest shown indicates that business is gradually becoming better. The demand is for good dry birch or white maple, air-dried in preference to kiln-dried to avoid warping. Either of the above woods are satisfactory provided they are free from pink casts or shakes. One manufacturer states that when he specifies St. John birch he is likely to get mixed wood, which is undesirable, but that Quebec birch when specified always proves satisfactory. Owing to the demands of the Canadian automobile industries for birch and maple of similar quality, Canadian prices are high.

The blanks in use for the manufacture of 12-inch varnished rules are 12½ inches by 1¼ inch and 12½ inches by 1 1/16 inch by 3/16 inch in size. These sizes apply to blanks having planed edges, and allowance must be made over these dimensions if the edges are rough.

Canadian Handles to be Tested

Interesting experiments are to be made in the course of the next few months in several of the South Wales collieries, when Welsh types of colliers' pick handles, bottom and top mandrils, colliers' sledge handles, smiths' sledge handles, and acme type helves, made of Canadian rock maple from the East Coast and Canadian Douglas fir from the West Coast, will be tested. At present all the above types are handmade from quality ash with the exception of the acme helves, which are hickory and machine-made. If these Canadian samples are satisfactory it is anticipated that an excellent business will be built up. The bottom mandrils and smiths' sledges receive the most severe treatment in ordinary usage, and it will be these types that will receive the closest attention.

The large English hay crop has resulted in a good general demand for hay fork handles, and the result is that dealers are open to replenish their depleted stocks for next year. The sizes range from 4 to 8 feet, with 6-inch increases in length, with a diameter of 1⅜ inches. The demand is for straight Northern ash, and the attention of Canadian exporters is called to recent trade inquiries for these handles, in carload lots. Quotations to be competitive must be about 5s. 6d. to 5s. 10d. ($1.39 to $1.47) per dozen for the 4-foot lengths.

Bent manure fork handles also command a steady sale for sizes 4 feet and 4 feet 6 inches with a diameter of 1 7/16 inches. The difference in price between the straight and bent ash handles should not be more than 6d. per dozen.

Small Handles; Tool Handles

Canadian manufacturers of navy pick and other types of large handles, having quantities of waste material from the machines, could at small cost make up such waste into small handles of all types such as chisel and hammer handles. Samples of the following types in common use in the West of England have been forwarded in duplicate to the Director, Commercial Intelligence Service, Ottawa, and may be obtained on application.

Sample No. 1.—Beach chisel handles, in sizes of ½ inch to ⅝ inch diameter ferrule, 6 inches to 6½ inches in length, sold to the wholesale trade at 19s. ($4.33) per gross, less 10 per cent. Larger sizes, from ⅞ inch to 1 inch diameter ferrule, of the same length, obtain 27s. ($6.30) per gross, less 10 per cent. If the shipments are large, these chisel handles come in assorted sizes ranging from ½ inch to 1 inch ferrule, the average price obtained being approximately 21s. ($4.90) per gross, less 10 per cent.

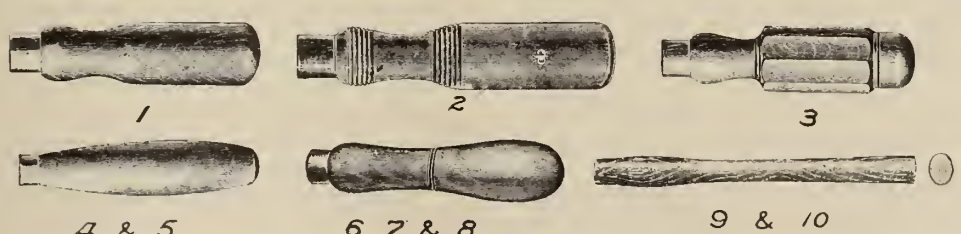
Sample No. 2.—Boxwood chisel handles of the round type, ranging in size from ½ inch to 1 inch. These are very popular, although expensive, selling manufacturers' price at 38s. ($8.86) per gross, less 10 per cent.

Sample No. 3.—Octagonal boxwood chisel handles, selling at approximately 4s. more per gross than for the round type, size ½ inch to 1 inch. The advantage of the octagonal type is that when resting on the bench the tool edge may be rested on end and the cutting edge protected.

Sample No. 4.—Ash chisel handles of the carver type. They are popular owing to cheapness. The price for assorted sizes is in the vicinity of 17s. ($3.97) per gross, less 10 per cent.

Sample No. 5.—Boxwood chisel handles of the best quality, selling at the same price as the No. 2 type, 38s. ($8.86) per gross, less 10 per cent.

All the above-mentioned types have brass fer-



Types of small handles in demand in West of England

rules, and are of excellent workmanship, finish and quality.

Samples Nos. 6, 7 and 8.—File handles of rougher quality, diameter of ferrule ¾ inch, ⅞ inch and 1 inch. The length of the ¾-inch diameter handle is about 4½ inches, while the 1-inch diameter handle is approximately 5 inches in length. These file handles all have iron ferrules. The selling price of the wholsalers to the retail trade is 10s. 6d. ($2.45), 12s ($2.80), and 14s. ($3.27) respectively per gross, from which must be deducted the importer's profit.

Sample No. 9.—Hickory hammer handles, in 12-inch, 16-inch and 18-inch lengths, the prices being respectively 3s. (70 cents), 3s. 6d., 4s. 9d., and 5s. 3d. ($1.23) per dozen, free delivered. This is the standard machine-made handle.

Sample No. 10.—Ash machine-made hammer handles, in sizes 12-inch, 14-inch, 16-inch and 18-inch lengths, cost approximately 6d. per dozen less than hickory handles.

Canadian firms turning out rock maple handles and helves should give special attention to the chisel handle types as an outlet for their wood residues. The ash and birch types, samples No. 1 and No. 4, could readily be replaced, while business might be done in the boxwood styles. The chisel handle trade is essentially one of quality. Certain firms in the West of England area are in touch with the Sheffield tool makers, while a considerable replacement trade is done as well through the retail trade. The handle types, Nos. 6, 7 and 8, with the iron ferrule, are the cheaper trade, and are purely a low price trade. (Prices are in all cases free delivered Bristol, and exchange has been calculated at $4.67 to the pound sterling.)

Extension Ladders and Washboards

Canadian extension ladders of the cable type are the finest on sale in this market, and are infinitely superior to those of English manufacture. They are wider and heavier than the English pattern, cost more but have a steady demand. The average English type is too slight and is considered none too safe by many in the business. Price is their recommendation.

The Canadian type ranges in length from 20 to 36 feet, built of good straight Douglas fir, and is made doubly safe by having a steel cable embedded on both sides the full length of the ladder. In ordinary ladders Canada cannot compete at present owing to the heavy freight charges.

The price per foot f.o.b. Canadian seaport is about 10d., but the freight comes to 6d. per foot, which naturally affects the trade. In other words, freight charges amount to 60 per cent. of the f.o.b. price.

One point of interest is that, while Canadian ladders are sold here to the trade at 1s. 5d. per foot, the dealers in town are able to sell them at 1s. 5d. per rung. This is owing to the rung intervals being of 9 inches, which means a profit of 25 per cent. to the dealer. English ladders, which are made without cables, are selling at 1s. per rung and are made from imported pine.

One manufacturer in Canada is endeavouring to reduce his freight charges by placing other goods between the ladders.

Canadian washboards enjoy an excellent reputation in the South Midlands, South Wales and the West of England, although prices are rather high.

Norwegian boards on the market are being sold with both zinc and all-wood rubbing surfaces, the all-wood type selling at 10s. 3d. ($2.39) per dozen. They are so light that they easily warp, and are sometimes made from two or three different woods, the rubbing surface being of pine.

A comparison of Canadian and Scandinavian types with zinc rubbing surfaces is interesting. Prices are 15s. 6d. ($3.61) and 12s. 6d. ($2.92) respectively, but the Canadian type is much superior in workmanship and quality of wood, having an all-wood back, while the Scandinavian type generally has only three small supports behind the zinc. The corrugations in the Scandinavian type are not as satisfactory as the Canadian.

Clothes Pegs and Pins

The picture moulding business is entirely one of quality and price. The wood must be air dried and not kiln dried. Some moulding of Canadian origin is on the market at the present time.

The demand is increasing for the 7-coil type of spring clothes pins, which is preferable to the 4-coil style now being sold. Firms handling Canadian pins are not inclined to encourage the 4-coil pins, and some difficulty is found in competing with the improved pattern. Such an alteration will involve the laying down of new machinery, but to compete with the Continental product it may prove necessary. Stocks of Canadian spring clothes pins are low at the time of writing.

Round dolly clothes pegs of 4½ inches are being quoted at 4s. 6d. per box of 5 gross in fair quantities c.i.f. Avonmouth, packing free. German competition is very keen and price-cutting has been general, prices much below the above having been heard. Certainly Canadian manufacturers cannot be expected to deliver clothes pegs c.i.f. United Kingdom ports for less than 4s. 6d. per five-gross, less 2½ per cent. cash discount.

Export Enquiries

A Dublin firm desire to get in touch with Canadian exporters of handles for hoes, spades, shovels, brooms, etc. No. 2457.

A Dublin firm desire to get in touch with Canadian exporters of wooden hay rakes put up in 10 or 12-dozen cases, for delivery next spring. No. 2458.

An English firm seek supplies of very clean Canadian birch squares and invite quotations c.i.f. United Kingdom from Canadian manufacturers on: 1,500 3-foot 8-inch by 3-inch by 3-inch; 800 3-foot by 8-inch by 3¼-inch by 3¼-inch; 1,500 3-foot by 2-inch by 3⅞-inch by 3⅞-inch; 400 3-foot by 8 inch by 4½-inch by 4½-inch; 400 3-foot by 8-inch by 5-inch by 5-inch; 1,000 26-inch by 3¼-inch by 3¼-inch; 600 23-inch by 2¾-inch by 2¾-inch; 500 23-inch by 2½-inch by 2½-inch; 200 26-inch by 3½-inch by 3½-inch; 100 27-inch by 4¼-inch by 4¼-inch. No. 2460.

A firm in Cape Town, having a good connection in the church and furniture trade, desire to hear from Canadian manufacturers of church furniture. Catalogues requested. No. 2468

An Uruguayan firm of importers of tools, hardware, etc., wish samples and quotations on Canadian axe and tool handles of maple or hickory. No. 2566.

Further information with regard to the enquiries may be secured by writing the Canadian Woodworker, giving the number of the inquiry on which information is desired.

How to Ascertain Costs in Box Plant

Items Included in Lumber Yard Expense—Factors Tending to Influence Costs —Application of Waste Factor

By E. J. Allisbrooke

In a recent issue of "The Wood Box" which is the official organ of the National Association of Box Manufacturers a writer in discussing the accounting plan as adopted by this organization suggests how some of the data required by this uniform system may be secured. These suggestions actually outline how the cost of material delivered to the planing mill and box saw department is ascertained, and also touch on the details of remanufacturing costs.

To the original cost of the lumber and yarding expense, thus ascertaining the cost delivered to the planing mill and add to this the surfacing and resawing costs. This will give the cost per thousand board feet ready for delivery to the box saws. These two items are clearly explained in our accepted Plan under "Lumber Yard Expense" and "Planing Mill Account" from which we quote:

Lumber Yard Expense

This account is to comprise all of those charges which enter into maintenance of a lumber yard, and consists of labor consumed in unloading and piling, and delivering to box factory, tram and foundation repairs, repairs to other equipment used, and the necessary fixed charges.

Under the heading of fixed charges, the principal items would be, rent of ground occupied by the yard, or its equivalent, and insurance on lumber.

All of these items are necessary expenses which should constitute an additional item of cost against lumber.

The cost per 1,000 feet is arrived at by dividing the total expense for the month by the number of feet purchased. The account is credited at the end of the month at the rate so arrived at, multiplied by the number of feet consumed. In the succeeding month, the balance carried over is to be added to the monthly expense and the total divided by the number of feet on hand at the beginning of the month, plus the number of feet purchased. This establishes a new rate for that month's consumption. This method is particularly adaptable to plants where the receipts of lumber is heavier during some months than in others.

Planing Mill Account

At the close of the month the charges made to this account are transferred to the Box Account. Using the number of feet of lumber consumed, the entry will show the cost of resawing and surfacing lumber.

In the paragraph on Lumber, the suggestion was made to keep a record of the different kinds of millwork done, the quantities produced in the several operations, and the time consumed in each. Where this has been done, a cost on the different kinds of millwork can be arrived at.

To illustrate this, the following hypothetical case is shown:

Work done: 429,648′ resawed ⅜″ and S2S in 286 hours
154,714′ S1S to ⅞″ in 80 2-3 hours

584,362′

Cost of labor in mill $340.62
Cost of overhead ..... 320.62 equals 94.1%

Total $661.24

Of the above there are consumed in making ⅜″ lumber:

286 hours Resawer and Helper at 55c perhour $157.30
286 hours Planer and Helper at 50c per hous .. 143.00

Total $300.00
94.1% overhead $282.68

Cost of resawing and surfacing 429,648′ $582.98
Cost Per M, $1.36

And in making ⅞″ Lumber:

80 2/3 hours Planer and Helper at 50c .....$ 40.32
94.1% Overhead 37.94

Cost of surfacing 154,714′ .....$ 78.26
Cost per M, 50c

Charge to Box Account

429,648′ at $1.36 per M $582.98
154,714′ at $0.50 per M 78.26

Mill work $661.24

It is obvious that there is a great variation in the manufacturing cost per thousand board feet of boxes of differing specifications and that an accurate cost cannot be obtained based solely on board measure. Actual recording of the time required in each, the sawing and making up, will conclusively demonstrate that there is a wide spread in the cost per thousand finished feet in each process.

Factors Influencing Sawing Costs

The following factors influence the cost of sawing the shooks:

Size. The production of medium length pieces is more rapid than of very long ones; of narrow pieces faster than wide ones, and it will be found when a part of a box is made of more than one piece in the width, production is slower than when of a single piece.

Thickness. When lumber is resawed before shooking the cost of manufacturing from thin stock is considerably greater than from thick, although the thin pieces be handled together as one board. The two pieces of lumber produced by resawing one cut work slower than a single thick piece and the three pieces from twin resawing require more time than the two pieces. These facts demonstrate an advantage in cutting the shook to size before resawing.

Quantity. Setting of gauges, changing of lumber and getting under way require time and this increases considerably the cost of cutting small lots.

Kind of lumber. The sawing of hardwood is slower than of softwood and this must be taken into consideration in the planing mill as well as in the shooking.

Grade of lumber. To make a sound box of low grade lumber is more costly in labor than when a good grade is used.

To obtain the correct cost of sawing into shooks

actual records must be made of the time required to cut parts of the box of various sizes and thicknesses from the smallest to the largest. For convenience these sizes may be grouped in steps of 3" in length and 2" in width up to 6", and 3" thereafter. From these time records figure the labor cost per 1,000 pieces of each size and compile a chart therefrom. Use the specifications most common in your operation as the base for the chart, and make differentials for the variations, such as add for the hardwood, deduct for large lots, etc. A chart in this form will be found convenient and should be extended to cover all sizes manufactured:

The cost per thousand pieces is obtained from the cost per hour of the cross-cutter, ripper and offbearer, to which is added a proportion of the wages of the lumber handlers and the foremen in the sawing department. This latter figure is obtained by dividing the total wages of the handlers and foremen by the number of sets of saws which is ordinarily in operation in this department. Where the cross-cutting and ripping is not done in one group, two charts will be necessary, one for each operation, cross-cutting and ripping.

The cost of matching and squeezing must be learned by actual time study. Compare this labor with the sawing cost of the same parts and ascertain the percentage ratio. For example if the labor for sawing the sides, tops, and bottoms of a lot was found to be $10.00 and the matching labor of these same parts was $1.50 the cost of matching is 15% of the sawing labor. An average of several tests will give a fair basis with which to compute this cost for such boxes as are matched.

Any special work such as cut handles should be added at this point. The cost per one hundred pieces should be obtained by taking actual observations.

Printing cost should be obtained by time records and be computed per hundred or thousand impressions.

Ascertaining Percentage of Waste

We have now reached a factor which it is difficult to determine accurately on each order and which it is advisable to average. This factor is waste.

Waste is charged to the job by percentage derived from statistics which show the results of working various grades and kinds of lumber. It has been customary to use only one percentage for all grades and kinds, but it cannot be too strongly urged to segregate these elements, especially in such factories where the variety of woods used includes Cottonwood, Pine, Birch and Gum, all of which possess different characteristics.

The percentage of waste is commonly spoken of as being related to the quantity of raw material out of which it develops. The manufacturer must be careful, however, to distinguish between the percentage so arrived at, and its application to his product in which he recognizes only the net feet from which the Waste has already been eliminated.

Thus as an illustration, the following example might be cited:

Material delivered to the factory and used	1,000 feet
100 boxes manufactured, contain	800 feet
Material wasted	200 feet

Percentage of waste, 20%
Percentage of material in product, 80%

We will now reverse the proceeding by beginning with the known quantity of material in 100 boxes, and show that the addition of that percentage to the finished feet will not correspond with the number of feet used.

100 boxes contain	800 feet
Add waste 20%	160 feet
Total material accounted for in cost	960 feet

This is obviously wrong, but in order to dispel any doubt regarding this point, the above illustration is cited. As a standard method of figuring waste into finished product, the following is recommended.

This is equivalent to 80% of the amount of lumber required.

Therefore, divide 800 feet by .80, and the result is the amount of lumber required, or 1,000 feet.

A Campaign for Better Packing

Manufacturers of furniture, because their product is often subject to damage in shipment, should be interested in a campaign which started September 4 with the following objects in view:

1. Reduction of loss of and damage to the public's personal belongings when transported by rail.

2. Dissemination of information regarding the proper packing of household goods when prepared for rail shipment.

3. Education of the many thousands of railroad freight agents along the lines of proper marking, packing, boxing and crating of household goods.

Four organizations nationally known are behind this movement, the American Railway Association, through its freight claim division, representing the operation of 95 per cent. of the railroad mileage of the United States; the American Railway Express Company, which handles a large volume of household goods annually; the National Furniture Warehousemen's Association, with a membership of more than 650 household goods storage companies selling service and space to the public in the United States and Canada, and the household goods division of the American Warehousemen's Association, comprising public storage companies.

New Edition Ready in October

The administrative offices of The Cosgrove Company, publishers of Cosgrove's Handbook of Woodworking Machinery have been moved from Owosso, Michigan, to Milwaukee, Wisconsin, and The Cosgrove Company will hereafter be known as The Cosgrove Technical Service, Inc. Geo. F. Cosgrove heads the new organization and will be in complete charge of the service department. "The heavy demands on the service department from all over the world make it necessary for me to devote my time to that branch of the business exclusively," said Mr. Cosgrove.

The first edition of Cosgrove's Handbook has been exhausted and the new edition is expected to be ready for distribution about October 15th.

The service offices will remain at Owosso, Michigan as formerly and the moving of the administrative offices will cause no interruption in the consulting service.

Machinery & Equipment

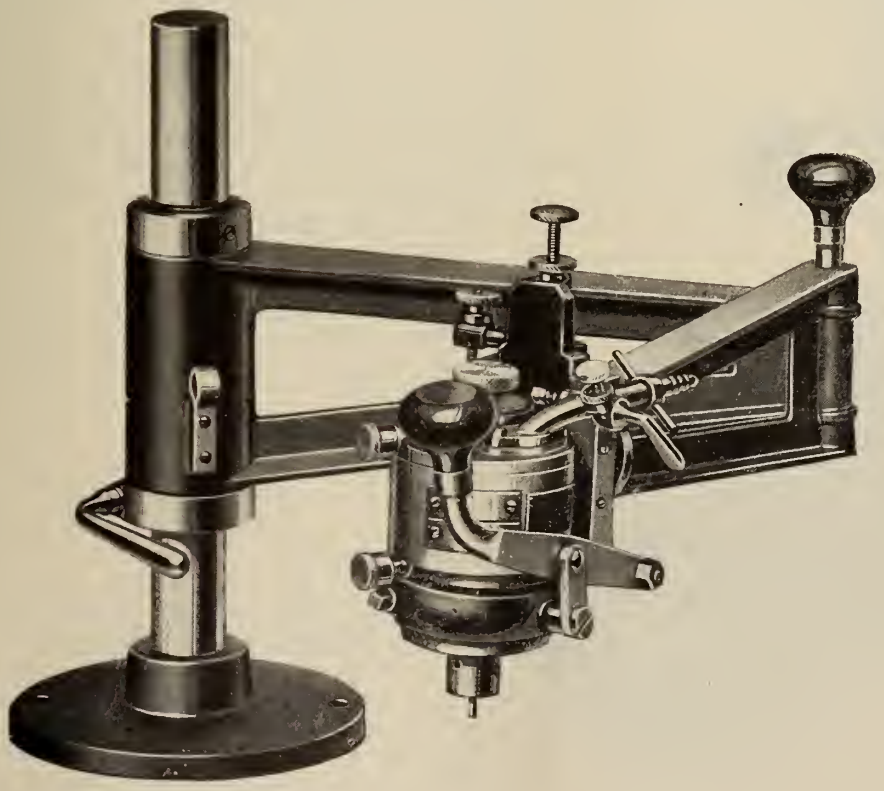
Onsrud Radial Router

The machine shown in the accompanying illustration is what is known as the Onsrud radial router. This is driven by a pneumatic turbine which attains a speed of 30,000 r.p.m. Driving the small routing and veining cutters at this speed results in maximum cutting capacity and a high grade of workmanship. The cutter is guided to a pattern and can be fed rapidly, even in the case of a heavy cut, in fact the machine cannot be harmed by overloading. The air motor, or pneumatic turbine as it is called, is controlled by a quick operating air valve conveniently located. An adjustable stop on this valve sets the motor for any range of power and speed that may be desired. The motor is specially balanced so as to eliminate all vibration and special ball bearings of a high grade type are used. The radial arm pivots on a thrust ball bearing and may be readily adjusted for heighth on the column and secured by a clamp screw. The cutter head has a vertical adjustment of three inches, while the radial arm when extended will work to a 32 inch radius. The air pressure is from 80 to 100 pounds per square inch. Further particulars with regard to this machine may be secured from the Onsrud Machine Works, Chicago, or from the Canada Machinery Corporation, Galt, Ontario, Canadian representatives.

Motor Driven Oil Stone Grinder

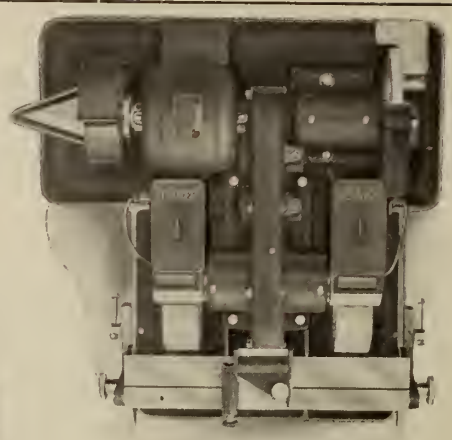
The popularity of the oil stone type of tool grinder seems to be on the increase. This has led the Oliver Machinery Company, Grand Rapids, Mich., to bring out a motor driven grinder. As will be seen from the accompanying illustrations this machine is driven by one built-in motor, the power being deliv-

Oliver oil stone tool grinder



High speed radial router with air motor running at 30,000 R. P. M.

ered to the second arbor through a train of gears. The various wheels are as follows: Oil stone wheel, cup type; emery wheel, emery cone and stropping wheel. The various wheels are particularly adapted for the repeat grinding and sharpening of such woodworking tools as plane bits, chisels, gauges and other bench tools. An oil reservoir is mounted over each cup wheel and oil is directed so as to drip on the inside of the wheels. Special wipers have been provided to prevent the oil flying off. The cone is particularly useful for the inside of curved edges and irregular shaped tools such as gauges, plane bits. The stropping wheel is used to remove the burr and to give a smooth, keen, cutting edge. This machine is arranged so that four operators may work at the various wheels at one time. Special wiring of any kind is not required as the grinder may be connected with any socket, in fact it is semi-portable as it may be carried from department to department and connected up with the lighting socket.

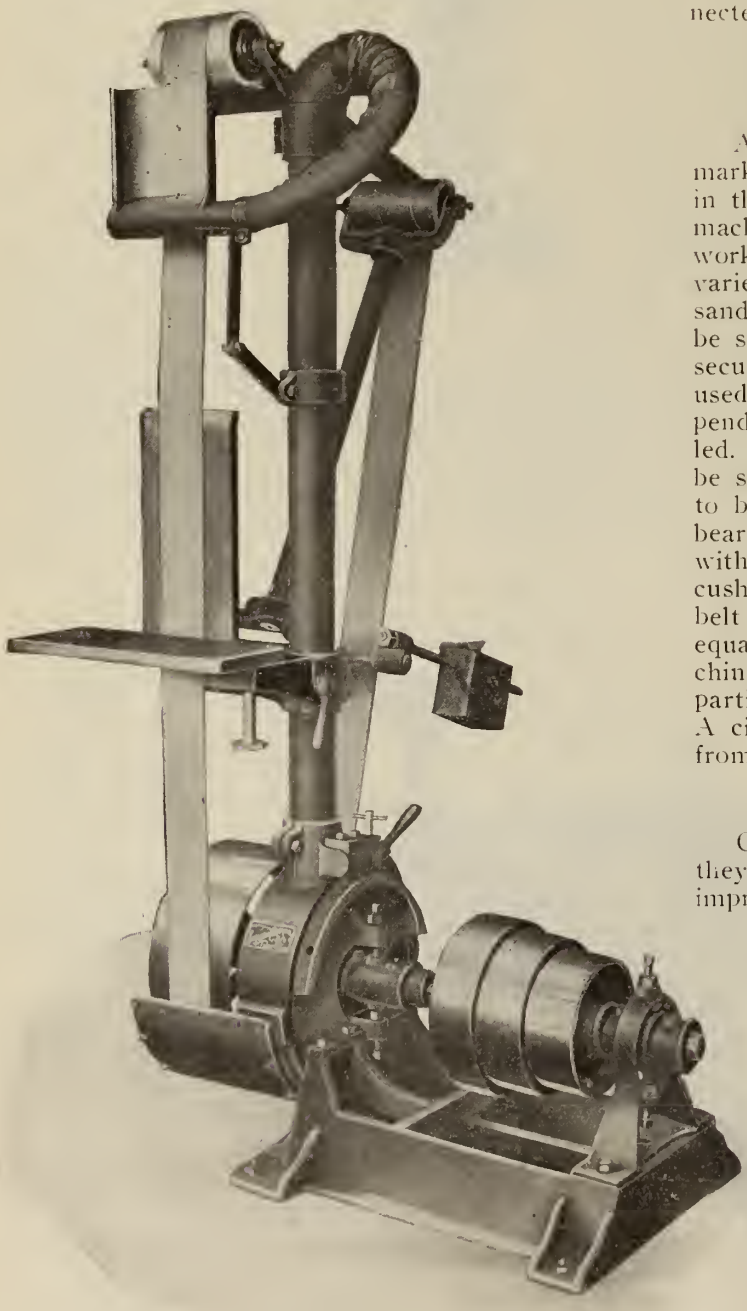


Top view of oil stone grinder showing different wheels.

New Variety Sander

A new machine has recently been placed on the market by Jackson, Cochrane & Co., Kitchener, Ont., in the shape of a vertical belt variety sander. This machine is designed to take care of various forms of work and of special sanding. It will handle a wide variety of work. The upright frame carrying the sand belt is adjustable on a large iron drum and may be set in different positions as required, and locked securely. With this adjustment the machine may be used in a vertical, horizontal, or angular position depending on the requirements of the work being handled. The table is made of hardwood strips and can be swung entirely free of the belt, permitting stock to be sanded lengthwise of the belt. S. K. F. ball bearings are used on the top roll which is covered with a thick layer of rubber. This provides a soft cushion against which to sand. The tension on the belt is maintained by an arm so that the strain is equalized under all working conditions. This machine does not require a great deal of floor space, particularly when operated in its vertical position. A circular and further particulars may be secured from the manufacturers.

Carving bits are small tools. Properly sharpened they cut moderately fast, not so rapid as other tools; improperly sharpened they do very imperfect work.



New variety sander recently placed on the market by Jackson Cochrane Co., Kitchener, Ont.

For a Better Finish

Too Much Attention to Price of Material and Not Enough to Quality of Finish

By J. A. Addison

The appeal to the eye is one of the most important factors in the sale of wood products. This implies to woodwork for a home as well as to fine furniture or musical instruments. While this appeal may be enhanced by the skill and ability of those responsible for the design and the manner in which it was carried out, yet, in the final analysis, it is usually the finish that makes or mars, that results in a quick turnover or in a sales inertia that may be extremely difficult to overcome. More than this the finish has a decided effect on the value of any item and on the price that it can command.

There is nothing new or startling in the above suggestion. Its truthfulness is recognized by those who have given the subject more than passing thought. Yet in spite of that such a line of reasoning is not usually carried out to its logical conclusion and that conclusion acted upon. Why this is so is another matter, one with which we are not particularly concerned. The fact remains however that not sufficient attention is given to the final finish, that which greets the eye and creates a favorable or an unfavorable impression.

Price Not Determining Factor

The quality of the finish might be discussed from two angles, the quality or grade of materials used and the thoroughness and care with which they are applied. In buying finishing material the price factor is given far too much consideration and is permitted to wield too great an influence on the final decision. It is commendable to buy as cheaply as possible. There are few who will dispute that, provided that that one item of quality is not overlooked. First raise the quality of the finish to a degree in keeping with the line you manufacture and then buy, as cheaply as you can, material that will enable you to maintain or even improve that standard. When the finish plays such an important part in the saleability and serviceability of your product it is indeed a short-sighted, lack-of-foresight policy that will sacrifice the finish for the sake of a temporary gain of a few cents in the initial cost of the raw material.

If this point could only be driven home some good would be accomplished. The attitude of buyers of finishing material, is that "I cannot afford to pay over so and so for the varnish, or stain or filler for this or that particular line." It is left to the manufacturer of finishing materials to so cheapen his product as to bring it within the required range of prices. It would not, perhaps, be correct to say that the matter of quality is overlooked entirely but it is certainly given second place.

Determine Standard of Finish

How much better would it be if the buying of finishing material was approached from the opposite angle. In sizing up the market for a certain line or certain design the manufacturer decides that a certain quality of finish is required to command that trade or that a finish of a certain grade will result in a much larger sale for that particular line. Then the problem becomes not one of buying the necessary material at a fixed and absolutely arbitrary price but rather of buying as cheaply as possible material that will give a finish of the required standard or grade. Let the grade of finish, not price of material, be the deciding factor, for it is by far the most important and most profitable item.

After such material has been secured its application should be given every attention. Perhaps this suggestion is not required for in most plants considerable attention is given to the methods employed in the finishing department, to the thoroughness with which the costs are applied and dried, to the rubbing and polishing operations, in fact it is safe to say that a consistent effort is made to use the material purchased to as good advantage as possible. In a general way these efforts are usually successful but often the whole effect is spoiled by some little detail that has been handled hurriedly or carelessly.

Details Often Overlooked

A friend of mine has an attractive and expensive walnut bedroom suite, the product of a local manufacturer who has the reputation of turning out high class furniture. When this suite was first shown me my attention was attracted by an unsightly dark spot on the top of one of the front posts of the dressing table. Evidently the finisher or toner went to touch up a light spot and applied some stain and neglected to rub the surplus off. Every time I see that piece my attention involuntarily wanders to that spot. To me this one slight imperfection nullifies the general quality and attractiveness of the whole article and even reflects on the complete suite. It would not have taken the man who did the touching-up more than a few seconds to have toned this spot down in keeping with the general shade of the finish. Points like this, and many of them could be cited, do much to detract from the general result of what otherwise would be an attractive finish.

It is certainly to be regretted that Canadian manufacturers do not insist that more attention be given to the small and seemingly unimportant details. It is often said that almost anything will get by in the American market but that does not hold true in Canada. Even if it did, that is not an excuse for careless, sloppy work. The finishing room foreman or who-

ever is responsible should be drilled to a realization of the fact that the finer details are important and that the careless work will not be tolerated.

The three essentials which must always be kept in view are, first a definite quality or standard of finish, second, material that will result in that standard being maintained, and third, the exercise of care and thoroughness in all phases of finishing room work. The goal is a line of articles which through their superior finish will command a permanent market and result in a satisfactory volume of sales at a minimum of sales expense.

How to Use Shellac to Good Advantage

Blooming Often Due to Lack of Knowledge or Care in Applying Shellac Coats—Extremely Responsive to Temperature and Humidity Changes—Should not be Applied Over Oil Stain

By Walter W. R. May*

Shellac was the starting point for the woodworker in his "abc" days in the finishing room and as his experience grew this quick drying varnish came to be his utilitarian "life saver" when nothing else could suggest itself. As he became expert he, no doubt, found shellac at his right hand when he set about some fine and costly work. "Well, we'll give it a coat of shellac anyway," was his philosophical decision in making the start and when he had worked days to achieve something lasting and beautiful in a "period" set, the chances are he found himself working shellac on the final stroke of the brush or the last dext and tender sweep of the pad.

A varnish that lends itself to so many stages of the finishing operation—from a prime coat to an antique dull or high French polish finish, must occasionally give the conscientious worker some anxious moments. Problems and difficulties are bound to beset him because though it is a curious thing, a blind sort of faith has been placed in shellac. It will do many and varied things, but it has limitations as has everything else. It is hardly too much to say, nevertheless, that many finishers endow shellac with almost magic qualities and expect it to work under and all conditions so far as inside work is concerned.

Technical Information Lacking

Shellac is such a simple varnish to make compared to some other varnishes that it is not surprising so little laboratory attention has been given to it from the finisher's point of view. The knowledge about its use, both in the cutting room and in the finishing room, has been knowledge handed down from father to son, or from expert to apprentice, with every man himself his principal teacher. The most exhaustive finishing text books for the manual student, which gave page after page to the how and why of glues, stains, colors, etc., passed blithely over shellac as a quick-driving something which either did or did not work for a given purpose. The information set forth was of a character generally true but faulty in just the places where the conscientious finisher needed help. Even the great Public Library in New York City as late as 1920 had no volume on shellac worth the name. The best is could offer was a half page from a German text book in very technical German which left the reader with little more then he knew. On the other hand, this same library boasted of its three hundred or more books on sleight-of-hand or black magic.

This disclosure led William Zinsser & Company's decision to issue a handy guide to the users of shellac and thousands of copies of this sixteen-page booklet "How to use Shellac" have been distributed free in the United States and Canada. It is now incorporated into one of the better known text books on finishing and scores of manual training instructors throughout the country have used this small volume as an auxiliary test in preparing the industrial student for his task at the work bench or his responsibility as the head of a finishing concern.

What Shellac Really is

Before taking up one or two of the more important problems in connection with the use of shellac, the finisher should know what shellac really is. Shellac is of very interesting history. In its raw state it is a gum that comes from far-away India. It is not a rosin or resin in the commonly accepted sense. It is the secretion and excretion of a bug which feeds upon the sap of certain trees in india and Siam. This bug is very small, being one-fortieth of an inch in length, and it swarms in great numbers on the limbs of the so-called lac trees. These bugs bore into the limbs of the tree and suck up the sap, eventually secreting and excluding it in comparatively copious quantities. In time this sap forms a sticky, gummy mass around the entire swarm and eventually hardens. During this process the female bugs lay their eggs in this liquid, and together with the males in the swarm, proceed to die. In the meantime the young are hatched and pick their way out through the shell-like mass and move on in new swarms to other trees.

This hard shell-like mass is eventually broken from the trees just as ice would be broken from around a water pipe or a tree branch, and this is shellac in its raw state. It is an organic resin produced through chemical processes taking place in the life of an insect and therefore because of resiliency and soluble qualities stands out in contrasts to the vegetable resins. It has qualities possessed by no other gum and it is soluble in alcohol or an alkali-water solution. It is not soluble in turpentine.

There is another booklet "The Story of Shellac" issued in phamplet form by William Zinsser & Company that goes into this interesting history of shellac in greater detail.

In its liquid form shellac—if it is good shellac—is nothing but shellac gum dissolved in alcohol. If it is to be kept for any length of time it should be contained in wood or in glass, although for convenient general use today, a composition can which has an interior lining of special process lead is used so that the White Shellac does not discolor or become streaky.

Containers should always remain corked or covered as alcohol being very volatile evaporates rapidly.

*Service Manager, William Zinsser & Co., New York.

Shellac that has thickened up from evaporation loses some of its qualities and although a great many users believe it makes just as good varnish when it is thinned up with alcohol again, this is a mistaken idea. The dry residue from an evaporated varnish is not the same as the original shellac gum.

Few problems will be met in using shellac as a first coat or primer provided the material on which it may be used is dry and the day it is used is not too moist or humid. Nothing is more flexible and responsive to temperature changes than shellac is as a prime coat, and always a pure shellac should be used for this purpose. An adulterated shellac is very apt to chip off and, of course, if the primer coat chips off everything on top is bound to come with it. In killing knots to keep the sap from coming through the paint nothing is ever suggested but shellac, and for these simple steps in finishing one can let his daily experience and native wits take care of any difficulties that come up.

Build up Thin Coats

One of the most helpful things for a young finisher to remember is that two thin coats are better than one thick coat and this holds in shellac even more than in some other varnishes.

Practical Points on Varnish and its Application

Pertinent Suggestions on the Handling and Use of Varnishes—Too Much Brushing Impairs Results—Select Varnishes Suited to Specific Requirements

By A. Ashmun Kelly

One of the prime requisites for successful varnishing is also one of the simplest, being nothing more nor less than cleanliness. Clean clothing, clean varnish, clean brush, clean pot, and finally a clean place to work in. These will give you a clean conscience, and your work will, or should be, spotless. Conversely, dirt and carelessness will yield failure.

For a full gloss finish the varnish should not be worked too much under the brush for this injures the gloss.

Keep a newly varnished job in the warm until it is quite dry, to prevent chilling or blooming. See that the surface of the work is clean, free from dust, dirt, grease or marks. To bear out a luster the surface must be smooth. Moisture and grease will cause blotching. If your brush is too small for the surface there will be brush marks; also if you work the varnish too long. Don't imagine that because the face of the varnish coating is dry that it is dry all through: it may only be surface dry. If the coating is too thin it will not stand out well, while if it be too thick or heavy it will not spread well nor level-out right. A light-bodied varnish brushes out easily, nor does it show brush marks as a heavy varnish is very apt to do. Heavy-bodied varnish should not be brushed out much, but be flowed on in a full coat, so that it will level up of itself. Each coat of varnish should have all the time for its drying it is possible to give it before applying the succeeding coat. A coat of ordinary varnish should have not less than 24 hours for drying; two or three days would be better.

Better to Use Special Varnish

Use varnish that is made for the purpose in hand; there are of course certain varnishes that will answer equally well for various kinds of work, but for fine work use the varnish that is recommended and made for it. Don't turn back into the can the unused varnish, but keep it in a can by itself, and it will not be wasted, as it can be used for something else.

Good work should have at least two coats of varnish, rubbing down the first coat with powdered pumicestone and water. It will then take the next coat better, and give a good gloss finish. On light-colored work the varnish is sometimes thinned to cause the coating to appear clearer or lighter-colored, but it is a mistake to do so. Better use a light-colored varnish, of which there are some very light, being made from selected pale copals.

Never add linseed oil nor turpentine to varnish to thin it out, unless you first heat it, and then shake it is well is mixe the ingredients together. Too much oil will make a soft varnish, while too much turpentine will cause the coating to lose its gloss. Apply varnish neither too heavy nor too light, for if too heavy it may crack, while if too thin the finish will also have a thin appearance.

Varnish will dry better in the light than in the dark. Hence the importance of having the varnishing-room as light as possible. Varnish dries much better in daylight than at night time. Varnishing done in the fore part of the day has an advantage over that done the latter part of the day. Then, the full light enables the workman to see better what he is doing. He is fortunate to have good natural eyesight; glasses do not take the place of eyes; they are helps only.

Some kinds of varnish dry upon the surface without being dry throughout, and this often deceives one. If upon such a varnish we apply another coating, before allowing sufficient time for thorough drying, there will be varnish-trouble in time. It is ever safer to give a varnish coating ample time for drying; better to be safe than sorry.

Care of Varnish Brush

It is not a good plan to keep the varnish brush in oil and turpentine mixed, nor in either alone. It gets into the brush and works out as you proceed with the varnishing, causing trouble. Also, turpentine injures the spring of the bristles of the brush. Should you happen to drop a varnish brush on the floor, hold it over a cup and pour turpentine or benzine over it, washing off any dirt. Then get a little clean varnish and work the brush out in it; then work the brush over the edge of a knife into a cup. Repeat until the brush is perfectly clean.

Do not expect a good job of varnishing if done in a damp or humid atmosphere. Cold also is bad for it. In such weather place the can of varnish in warm water, to remove the chill.

Take into consideration the size of an object that is to be varnished when selecting a brush to do it with. Use a large brush for a large surface, and a

smaller brush for a smaller surface. Sometimes a bristle brush is the best for using, and at other times a softer hair will be found better adapted for the work in hand. It depends upon the character of both the varnish and the job. Some choose an old paint brush, well cleaned out, for applying a very heavy bodied varnish, but for ordinary well-bodied varnish an elastic hog bristle brush is usually found to be best. Heavy varnish requires a stiff bristle to cut through and spread the varnish well.

Air Circulation Aids Drying

Varnish needs air and ventilation if it is to dry out well. You observe that it never dries in the sealed can, but when you unseal it and allow it to stand exposed to the air it pretty soon skins over. The varnish room must not be air-tight, though on the other hand it must not be drafty. When the ventilating system is right there will be air in circulation, but no drafts. Some shops have neither because they are sealed.

It cannot be claimed for any varnish as a particular virtue that it dries very slowly, although a quick-drying varnish usually does not live long. A varnish may be a slow drier because it contains much oil, or because the varnishing-room is sealed tight.

The best workman cannot do good work with poor varnish, assuming now that such work is to be first-class. Of course, cheap work must be done with cheap varnish, and such varnish may be good or bad, these being arbitrary terms. A cheap varnish used on a fine job would be a poor varnish; but the same varnish used on cheap work might be a good varnish for that kind of work. For furniture not subject to rough usuage a rosin short-oil varnish will answer the purpose; whereas, for furniture that will receive hard use a long-oil varnish will be best. As a general proposition the long-oil varnish is the most durable, but the luster will not be as good as that containing less oil. Tough varnishes are made with much oil in them, while the hard varnishes are made with more hard copal in them. A varnish rich in oil will take the thinners at a lower temperature than a short-oil varnish will. These little hints will serve to show something of the difficulties varnish makers meet and overcome. For mixing with a pigment or white base, as for enamel, the varnish must be light-colored, and the gum from which it is made must be light of color and be so treated that when mixed with certain kinds of pigments the mass will not liver or thicken.

Well Aged Varnish Gives Best Results

The very best varnish will deposit some sediment after standing in the settling tank for some time, but it will be a very minute quantity, while a poor varnish may show as much as 7 per cent. of sediment or foots, each standing several months.

A quick drying varnish is not a durable one. The slow drying varnish hardens more thoroughly and retains its elasticity better than the quick drying varnish. Manganese varnishes are of lighter color than those prepared with sugar of lead, litharge, red lead, pyrolusite, etc. They resemble more nearly in color those made by the action of atmospheric air or the direct action of oxygen gas.

It is a decided advantage to allow the varnish to season and settle a long time in the settling tanks, though this adds to the cost of production. The result achieved will well repay the increased cost. It becomes clearer and brighter for long standing in the tank, because every particle of flocculent matter becomes deposited at the bottom. The oil used in making varnishes is supposed to be itself free from foots or flocculent matter, yet there will always be some sediment. The oil used is boiled oil.

Some of the Newer Finishes

By Geo. A. Otto*

Among the newer finishes, one that has received considerable favorable comment and catches the eye of furniture buyers is the Hugenot or bleached walnut finish. This finish tends to bring out and enhance the natural beauty of the walnut, and produces a light soft tone that is very attractive.

It is essential that the wood surface to be finished be absolutely smooth. The first operation is a sponge coat of water which is allowed to dry for 3 or 4 hours and then sanded. Next follows a coat of Hugenot acid stain. This is sanded lightly, as the sanding which followed the sponge coat of water removed most of the grain which usually raises after a coat of acid stain has been applied. After being sanded a thin coat of wood lacquer is applied. Then the surface is filled, a light, almost natural shade filler being used. When this has dried thoroughly a thin coat of white shellac is applied and then more sanding. The final coats consists of two applications of wood lacquer and two thin coats of good rubbing and polishing varnish. This is water rubbed with pumice and then given an oil rub. The result is a well finished surface in an attractive and unusual shade.

Three other common finishes are Tudor-Brown Mahogany, French Walnut and Antique Walnut. These finishes are in the open pore class and are usually built up with lacquer. They vary as to color but are all produced by the same method, either using an oil or acid stain as follows: See that the wood surface is smooth and then supply a coat of stain. If an acid stain is used follow it with a thin coat of shellac or lacquer and then sand. Next follows a coat of thin white shellac which is sanded thoroughly. The finish is then built up with two or more coats of wood lacquer as desired, depending entirely on the body required.

Windsor Brown Oak is a finish that is becoming quite popular. This works out very attractively for either plain oak or walnut. In the case of oak a coat of light brown filler is first applied. After the filler has dried thoroughly, a blending stain with a brown cast is brushed on with a soft brush. It must be borne in mind when applying this stain that too much surface must not be covered at once as this coat must be blended before it sets. Just before setting it is shaded lightly across the grain, then blended with the grain using a soft cloth. This is almost the same process as filling, except that the surface is not rubbed, just shaded and blended lightly. After this has dried thoroughly a coat of white shellac, and two thin coats of rubbing and polishnig varnish are applied. This is finished off with oil and pumice.

In the case of walnut the same procedure is followed, except that the final coats are shellac and wood lacquer, instead of varnish.

*Standard Paint and Varnish Co., Windsor, Ont.

VARNISH

Employment of low grade varnishes in the finishing department is a "pennywise" policy. Insure a fine finish on all your products by using nothing but the highest quality varnishes.

International Varnishes are, in every case, the result of long and careful research into the requirements of the wood working trade.

Prices and particulars furnished on request.

INTERNATIONAL VARNISH CO. Limited

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Windsor Quality Wood Finishing Materials

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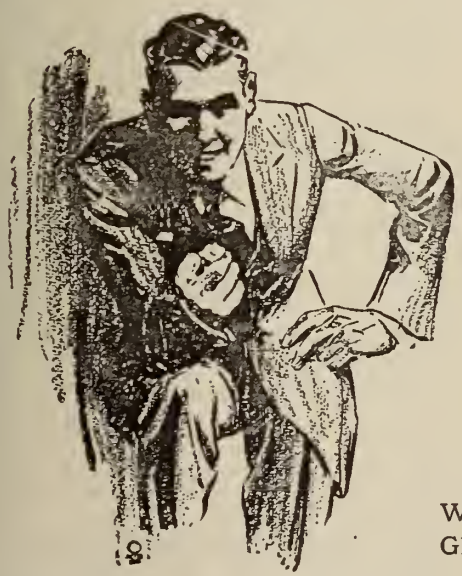

Ninety-five per cent. of the manufacturers of furniture and interior fixtures in Canada buy their wood finishing materials from us. Why? Because we are the pioneers. The others follow. We manufacture all the standard new and modern finishes as they come from the furniture markets. We are the one firm in Canada who can give you complete information and service on any finish on any wood.

If you buy materials manufactured in the States, you injure your own business and Canada too, by keeping Canadians out of work. How about **you?**

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Wood Fillers—Oil Stains—Acid Stains, Walnut and Mahogany Water Powders, Liquid Mineral Wax, (Natural and dark), Satin and Gloss Enamels—Varnishes.

Standard Paint & Varnish Co. Limited

Windsor, Ont., Canada

What Spray-Painting System Can Do for You

Now Being Successfully Used for Application of All Coats—Increased Output and Lower Costs—Eliminates Certain Troubles Frequently Encountered when Brush is Used

By R. D. Waltz

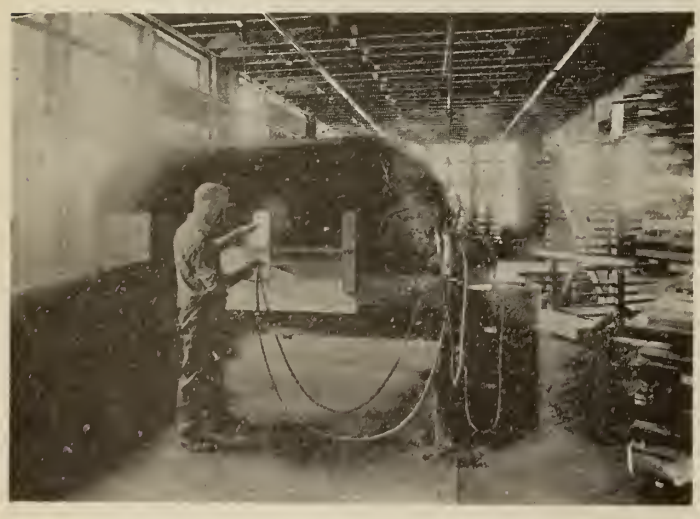
For more than twelve years the spray-painting system of applying varnishes, enamels, lacquers and like materials has been a potent factor in increasing production, improving results and reducing costs in the industrial finishing room. Practicability of method and dependability of equipment are well known in and strongly endorsed by this large, progressive and exacting field.

The work done by the spray system in industrial finishing is almost unlimited. There is no material, whether varnish, enamel, shellac, filler, stain, lacquer or japan; there is no surface, whether wood, metal or composition; there is no grade of product, from inexpensive to highest class; but that is sprayed to big advantage and with equally big economy.

Evenness and uniformity, as well as thoroughness, of the sprayed coating insure the high quality work of the spray system. Uneven and ornate surfaces receive the same thickness of coating when sprayed as do the flat, smooth areas, and this is accomplished without extra effort or slowing up of operation. Runs, streaks, fatty edges, brush marks and other defects are completely eliminated if the spray is handled intelligently.

Gratifying Increase in Output

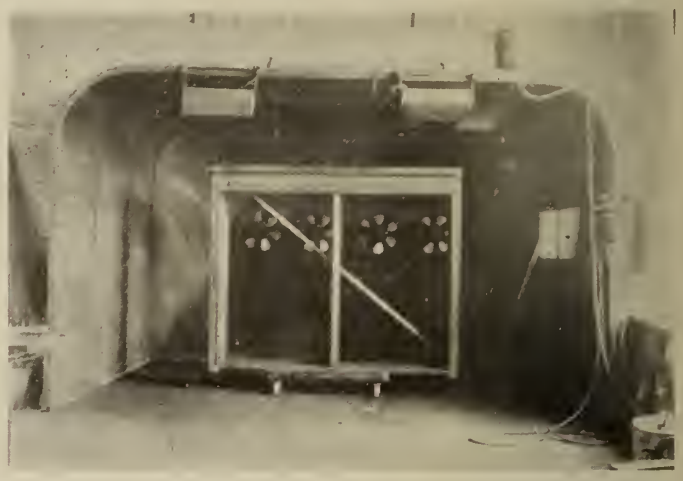
Speed of spray-finishing over the hand brush method is of outstanding importance. This averages from two to six times faster. There are exceptional cases where the speed of the spray is even greater. When brushing there is time lost in dipping into the pail, lifting the material to the work, brushing the material out; not so when spraying, the material is



Showing spray being used for application of stain

always at the nozzle of the spray gun ready to be released by an easy pull on the trigger. This effects a tremendous saving in time and labor, and makes for a more satisfied lot of workmen. The speed of operation also does away with congestion in the finishing room and makes possible a worthwhile saving in floor space.

Healthful and clean working conditions and reduction of the fire hazard in the finishing room result from a proper installation of the spray system. All



Extra large spray booth to accommodate special work

fumes are confined within the walls of the steel fireproof booth and are completely removed to the outside by the exhaust fans. This important feature insures improved and increased production.

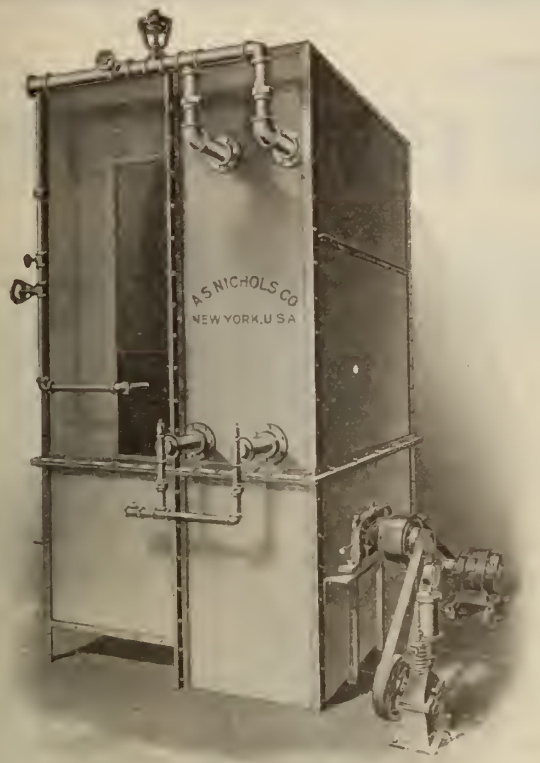
Operation is simple and dependable. The equipment is easily adaptable to individual requirements and proficiency in its handling is quickly acquired. The upkeep cost is so slight that it can be termed, negligible.

Better Results Secured

Here are a few facts showing what representative furniture manufacturers have accomplished in the way of reducing costs and improving results in the finishing room with the spray-painting system: A manufacturer of bed room furniture states, "We have used the spray for eight years. At the time of installation we had four or five men varnishing, whereas now we have only two. Our finishing room foreman feels that the spray greatly improves our finishing as it eliminates brush marks and varnish runs. The spray also saves labor in the rubbing department."

A maker of fine furniture, interior finishing and wood mantles says, "According to the opinion of the operator, the spray machine does the work of six men and does it more evenly and efficiently. Take, for instance, rattan, willow ware and goods of that nature, you cannot do as good a job with the brush. In the case of the spray gun, it puts the paint on evenly without any lumps and bunches, which you cannot do with the brush; with the brush the paint is pushed on the inside of the cane and cannot be brushed smooth and very often causes damage to expensive clothing. The operator quotes the case of

(Continued on page 76)



A Logical Conclusion

You have increased the Efficiency of your mill by replacing Hand Saws, Planes and Sanding Blocks with Power Driven Machinery.

You can increase the Efficiency of your Finishing Room by installing

Nichols Varnish Drying Equipment

And reduce finishing time 50%—
Dry varnish 8 times as fast—....
Improve the finish—.....
Lower the cost.

Nichols dryers successfully dry varnish, enamels, stains, fillers on automobiles, pianos, furniture, caskets, refrigerators, etc. Results guaranteed—let us hear from you.

A. S. NICHOLS COMPANY, Aeolian Hall 33 W. 42nd St., New York City

Manufacturers of dryers for lumber, veneers, glued stock, varnish, paints, enamels, etc.

Your Product Finished --- *better and in less time* --- by the DeVilbiss Spray Operator

The operator of the DeVilbiss spray gun works with greater ease and advantage than a hand-brusher—regardless of article finished or material used.

The coatings he applies are more uniform and entirely free from defects. His speed of finishing averages 4 to 5 times faster than the hand-brusher's. His working conditions are more healthful and less congested.

These advantages and economies are found in the thousands of finishing rooms now using the

DeVilbiss
Spray-painting System

—and the same advantages and economies can be as easily and successfully had in your finishing room.

A word from you and we'll gladly explain further about having a DeVilbiss spray operator on your finishing job.

The DeVilbiss Mfg. Co.

256 Phillips Ave., Toledo, Ohio, U.S.A.

Save time and money by painting your plant buildings, inside and out, with DeVilbiss Portable Spray-painting Equipment. We should like to tell you more about this.

Complete Finishing

You Want AIR-BRUSHES Not Just SPRAYERS

Why limit the economy of air finishing to certain materials and climatic conditions? The Paasche Air Brush and Conditioning Unit meets ALL operating emergencies. The **Paasche**

1. **Applies Any Materials in Any Climatic Conditions** without waste.
2. **Is Non-Clogging,** due to complete isolation of air and material until after leaving brush.
3. **Is Perfectly Controlled;** trigger varies spray from fine line to most any width; or allows air blast for dusting.
4. **Requires No Soaking,** as paint does not enter air control parts.
5. **Is Flexible,** because it allows the use of any style material container.
6. **Allows Either Round or Flat Spray** by turning set screw on air cap.
7. **Allows Rapid Change of Colors** without taking apart or cleaning Brush.
8. **Does not Fatigue,** because of two-finger trigger and natural grip.
9. **Has All Metal Construction;** no packing or washers to get out of order.
10. **Is Well Balanced;** hoses counterbalance.
11. **Cleans the Air,** by means of metal strainer.
12. **Allows Accessibility to Awkward Places;** hose can be drawn over operator's arms.

Paasche Superior Finishing Cabinets

Insure the fastest possible removal of fumes and greatest working convenience at the least possible cost. The carefully studied angles of Paasche Cabinets eliminate air pockets and counter currents, and the unique design of the aluminum exhaust blades allow one motor to do the work of the usual two. The motor is placed outside the exhaust port to eliminate fire hazard. It is especially designed and built by the General Electric Co. in ¼, ½, 1 and 2 h.p. sizes.
Superintendents of many of the country's largest industries have found Paasche Cabinets not only superior to others, but actually cheaper than home-made affairs. Paasche Cabinets are built in three standard types—**floor, sanitary** and **bench**—with many sizes and adaptations to suit.

Cuts Labor Costs $7500.00

The foreman of the finishing room of one of the world's largest furniture manufacturers says:

"When we began to install the **Paasche Air Brush** system ten years ago, the savings possible became immediately apparent. "Work that used to require eighteen men by hand work is now accomplished by four men with **Paasche** equipment—a saving of $7,500 in labor costs alone. Greater production due to the installation of this equipment, however, even pleased us more than the labor saving."

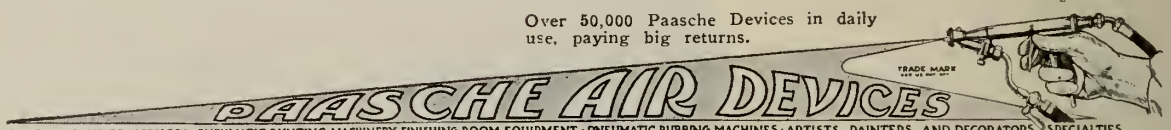
Paasche Pneumatic Rubbing Machines

rub, polish and sand with equal efficiency. The larger heavier machines are raised off the surface automatically, at the operator's desire, and lowered again by simply turning a valve. This so lightens the work that many factories are using women operators with Paasche machines. They are of the pneumatic type—faster than electric machines. Light in weight—allowing sides and ends of articles to be polished without undue exertion. Over 4,000 in daily use, increasing production and lowering costs.

What About Your Requirements?

Write us, without obligation, and our Engineering Division will serve you promptly and intelligently.

Over 50,000 Paasche Devices in daily use, paying big returns.



PAASCHE AIR

Main Office and Factory:

Representatives

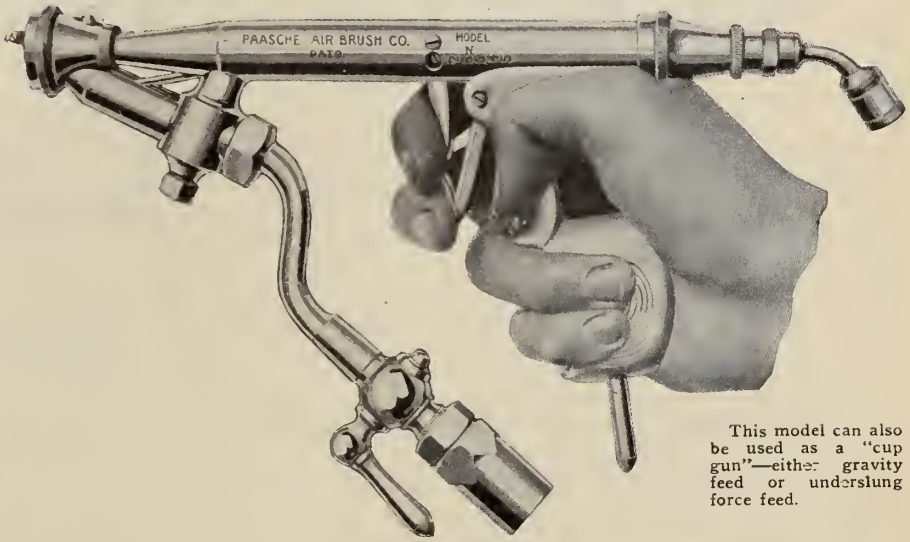
THE A. R. WILLIAMS

Established 1878 **Phone—Adelaide 0020**

HALIFAX, N. S. **ST. JOHN, N. B.** **MONTREAL, P. Q.**

Room Equipment

Westinghouse Polyphase Motor



This model can also be used as a "cup gun"—either gravity feed or underslung force feed.

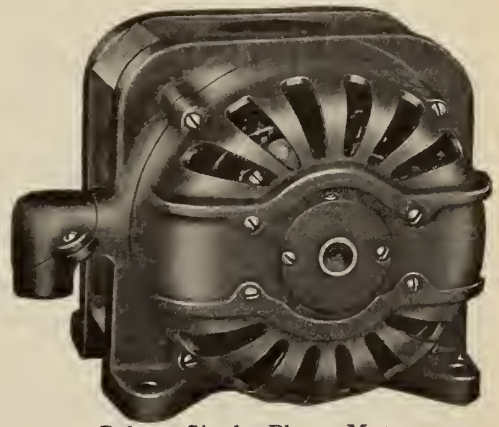
Double Cylinder Compressor Outfits Furnished in Capacities from 50 to 250 Cubic Feet, Nos. 38 to 50.

CURTIS Double Cylinder Air Compressors,

WESTINGHOUSE Polyphase Motors,

BALDOR Single Phase, Ball Bearing Motors,

are an assurance of a plentiful and unbroken supply of pure clean air, so necessary to the success of your finishing Room.



Baldor Single Phase Motor

The finishing Room Sets the Stamp of Quality on the excellencies of material and workmanship in your product.

BRUSH COMPANY

1921 Diversey Parkway, Chicago, U.S.A.

in Canada

MACHINERY CO., LIMITED

64-66 FRONT ST., WEST, TORONTO

TORONTO, ONT. WINNIPEG, MAN. VANCOUVER, B. C.

What Spray Painting Can Do for You

(Contnued from page 72)

painting seventy-five chairs in twenty-three hours' time, saying it would take three men a full week to do the same work."

On store, bank and office fixtures, this report was received, "One spray operator does the work in the same period of time as was formerly done by four or five brush men. The finish is better and especially so on moulded or carved work, as well as on spindle and scroll work, which is very difficult to finish with the brush without leaving fat edges or runs. These results have been obtained in the application of varnish, enamel and shellac, and the small loss in material is far exceeded by the big saving in labor costs. Since installing the spray system, we have more than doubled our capacity in the finishing department with fewer men, due to the fact that the finishing can be done in comparatively small space and there is more room for drying and handling than when we had finishers located all over the floor.

A maker of popular priced bed room furniture gives this information, "We have nine spray guns in use and it would almost be impossible to get along without them. One man with the spray gun can do more work than five by the old hand method. In the years we have used the spray system, we have never known any bad effects from a health standpoint. The spray process not only is a great labor saver but it improves the quality of the work."

Specially Applicable for Lacquers

Another prominent manufacturer, "The majority of the products made by us are sprayed with enamel, and it is imperative to have the highest grade of finish on the equipment because of the keen competition, and the added fact that the equipment is used by the medical profession. Applying enamel with a brush takes more time per coat and twice as many coats per unit, this would necessitate twice the working force of the enamel department, and twice the floor space which would be out of all proportion. These two items would raise the cost to such an extent that our products could not compete with similar ones on the market."

In the display furniture field one manufacturer makes this statement, "The work we are doing could not be done with the old style brush method, and the class of enamel we are now using to finish our products is absolutely impossible to apply with a brush. We are also getting finishes which are proving one of our main selling arguments, which could be obtained in no way than with the spray gun. We are turning out finished articles from our paint room in twenty-four hours, where it would take us from three days to a week to turn them out under the old conditions."

A maker of wood and steel furniture for printers gives this interesting information, "We operate eight spray machines and the eight men operating these machines could not be replaced with less than forty brush hands, besides the space required in our paint shop would be doubled. Not only is the cost of doing the work less, but the quality and finish is superior in many instances where the spraying machine is used. Complicated interiors, grill work, slats, etc., which cannot be properly painted at any cost by hand, can be properly coated inside and out with the spray gun. There are many classes of finishes which cannot be put on by any other method than the spray, we refer particularly to such finishes as lacquer and pyralin."

To those who are not making the most out of their spraying equipment and to those who are considering their first installation of such equipment, this brief review will serve as a helpful reminder of the many uses to which the spray-painting system can be successfully put and the attending advantages and economies.

The Wood Finisher

Under the above title an extremely interesting and practical book has been prepared and published by Mr. A. Ashman Kelly. Mr. Kelly needs no introduction to wood finishers as he has been writing for various trade papers of repute for a good many years. An idea of the thoroughness with which this subject is covered may be gained from the chapter headings as follows: Description of the Woods used. Wood Filling. Finishing Western Woods. Finishing Hardwood Floors. Finishing Veneered Work. Wood Stains and Wood Staining. Staining Wickerware and Willow Furniture. The Equivalents of Water Colors in Aniline Dyes. Description of Stains and Their Uses. The Art of Wood Polishing. Finishing New Furniture. Refining Old Furniture. Practical Notes on Varnishing. Description of Varnishes Used. Varnish Ills—Cause and Cure. Shellac Varnish. How to Use the Air-Spray Machine. Information—General and Special. Varnish Stains. The book is replete with practical suggestions and formulae for stains, polishes, and other materials in common use. A number of chapters are devoted to the use of varnish and the various troubles encountered such as blooming, checking, pin holing, etc., are gone into in detail and suggestions are made as to how they may be prevented or corrected. This book is only one of a practical series by the same author. The price is $3.50. Copies may be secured from the Canadian Woodworker.

Advantages of Varnish Drying Equipment

(Continued from page 80)

ter surface on which to work and thus would not have to work so long or cut down the high spots to the same extent.

To those who are not operating drying kilns the savings to be effected and the resultant gains to be made are so outstanding as to warrant every consideration. In addition there is a decided advantage in knowing that a certain coat will be dry in so many hours regardless of atmospheric or finishing room conditions and in knowing with absolute certainty that a certain coat is dry before the next one is applied. With special drying kilns these points are well taken care of.

The best day for doing your best is the one coming seven days in a week.

Put things over instead of just talking them over.

The world may owe every man a living, but he has to do his own collecting.

Should an emery wheel be soft or hard? If the former it tends to have shoulders when grinding teeth of one depth. If the latter the tendency is for it to burn.

Finishing Room Materials

Turpentine
Sandpaper
Rotten Stone
Pumice Stone
Chamois
Steel Wool

SHELLAC

Sanderson Pearcy & Co. Limited
272 Van Horne St., Toronto, Can.

Preferred
by Careful Buyers

Samurai Enamel
Cameo Under-Coat

Formulated to meet the needs of furniture makers, Samurai Enamels, gloss or matte, are superior in wear, hiding power and in their perfection in sanding and rubbing.

Folder showing complete colorings sent on request.

Denny, Hilborn, & Rosenbach
Chicago Philadelphia
N. J. Greene, Canadian representative

IT NEVER DISAPPOINTS

Marietta Spartanite Enamel is so Elastic that it is adaptable to the widest range of climatic conditions. It will wear well either inside or outside and cannot be beaten for beauty.

Ask us for proof

The Marietta Paint & Color Co
General Office and Factory, Marietta, Ohio
Southern Office and Factory: High Point, N.C.
P. S. We also make stains and varnish.

A Better FINISH

You can improve the appearance and durability of your finishes and increase the saleability of your furniture by using

Cosmos High Grade Lacquers and Lacquer Enamels

Lacquer gives a permanent, waterproof surface that is tough and durable.

It dries rapidly, increasing the output of the finishing department. Successive coats may be applied at half-hour intervals, enabling work to be finished in one day.

Samples, prices and other particulars gladly furnished.

Our Specialties:

METAL LACQUERS
WOOD LACQUERS
ENAMELS
BRONZING LIQUIDS
EUREKA AIR BRUSHES
AMYL-ACETATE
REFINED FUSEL OIL
COLLODION
BRONZE POWDERS
MATCHLESS METAL POLISHES AND BUFFING COMPOSITIONS
BANANA OIL

Cosmos Chemical Company
Port Hope Ontario

Machine Rubbing as Viewed by An Expert

Finishing Room Foreman Expresses his Views on Use of Rubbing Equipment —Outlines How He Gets Results

By Walter K. Schmidt

Whether it be producing a dull rubbed finish or a high polish, it means the employment of a good deal of physical strength and it thus is most natural that the work done in the forenoon is greater than that done in the afternoon. But with the advent of the "Rubbing Machine" the increase in production has been so marked and the results of such greater uniformity that the application of its use has been steadfastly recommended by many practical men.

Nothing could better explain the advantages than a word story given by one of our most successful foreman finishers, which was about as follows:

"I have the boys use the machine wherever possible. Of course, there are certain parts that have to be done by hand, and for these I have always enough work so that by re-arranging the work for afternoon and toward the close of the day, I get a universally even amount of work out every day. The machines work faster than the men, and therefore the majority of the work is layed out for them. Toward the end of the day 'we clean up' which means we take off the machines and the entire crew does the touching up, the cleaning up, and the hand rubbing that the machines cannot take care of to advantage. I save my men, I get out more work, because I systematically divide up the work so that no one man has a back-breaking rubbing job for the entire day. I switch the men around, and they consider it a treat to be put to work with the machine, but it's a fair shake all around, and if you want to see the results, go over there and criticize those tables."

Two of battery of eight rubbing machines in Gibbard plant

Coming from the head of a department, straight from the shoulder, with the results there as mute evidence, it must be recognized of sufficient import to any factory where rubbing or polishing is done. It is not my intention to speak of the details of rubbing and polishing, but it is my desire to call attention to the immense amount of money and labor saving that a rubbing machine makes possible. It doesn't matter whether it is a varnish, a shellac, wax, or wood lacquer finish; yes, enamel and lacquer enamels as well. It does its work better than the human hand. All it asks is the guidance of the brain back of the operator and, necessarily, of course, a bit of practice and judgment.

Electric type of portable rubbing machine as found in many plants

An incident which may be more common than realized came to the writer's notice where a rubbing machine was idle. Upon questioning the foreman why it was not employed, it was found that not sufficient time had been given the varnish to dry, and thus he had encountered some difficulty. The men, he stated, would not cut through when the varnish was a bit green, and that is why he was not using the machine and had put on more hands. He never figured that the few hours more drying time would have more than been made up if he had employed the machine after he knew the surface was in condition to be rubbed. Thus, it will be seen what a factory can lose in wages alone when the benefits and proper handling of devices that will make for profit are not thoroughly understood or looked into by those whose business it is to obtain such necessary knowledge as will make for the best results. I have often wondered what a man of this kind would do if he became the possessor of a good automobile. Would he give up trying to learn to drive it right and return to walking or riding his bicycle?

After a man has spent 50 years running woodworking machinery, he will often run across new problems.

When your planer or sticker has grooves worn in the bed it is time for it to be planed to a level surface.

How to Overcome Pinholes

Pin holes are usually caused by too much water in the air going through the spray gun. To prevent this water getting into compressor the intake pipe that is often lead outside should be installed in a dry place inside of factory. We have found this method a big factor in preventing pin holes. Should you at any time have any trouble with pin holes in varnished goods try the following. Rub the parts with pumice stone and water, then refill with same filler as originally used and then give a light-sand paper and revarnish.

Practical Hints on Rubbing

In the process of rubbing, we often have trouble with varnish scaling or pulling out. This condition is caused by improper drying. Sweating also is another trouble often encountered due largely to work being rubbed too close. A very good method where work is in a hurry and must be gotten out is to give the work a light rub and let it stand for twelve hours or longer if possible. Then polish off with fine pumice stone using plenty of water. This will of course leave the surface quite shiney, but in oiling off the piece the gloss can be dulled down quite a lot by using a water damp cloth instead of a spirit cloth. This will give a nice dull finish.

Coarse felt should always be used for water rubbing as it is not so apt to pick up the varnish as is often the case where work is hurried. It is better to rub this class of work with hand pads especially the final rubbing. A great deal of the trouble common in the rubbing department can be eliminated by being careful in applying the different coats and by seeing that the varnish is clean. If necessary strain the varnish before spraying or brushing. Also have all tools in a clean condition and the room where the varnish is applied should be dust proof and of proper temperature which should be not less than 70 deg. F. Where work is sprayed it should be gotten into the kiln as quickly as possible after the operation so as to give it the proper heat to aid in flowing out evenly.

Treatment for Scratches and Checks

Let white shellac stand until oil comes to surface. Scim it off and put into bottle.

Then take 1 lb. of Gum Sanderac, add 1 quart of metholated spirits, and put in a small pail. Put this pail in another pail of water and boil with steam until dissolved, being careful not to get any water or steam in mixture. Then take one part of oil taken ot shellac, to one part of mixture boiled. Shake well in bottle, then apply to defective parts, when dry take a piece of sand paper dipped in Benzine, and sand parts smooth, then revarnish. Should case have been rubbed give defective parts same treatment, then rub with pumice stone and oil, or water. Will the reader kindly bear in mind that this requires practice to work successfully. If preformed properly it is a very successful way of treating defective parts.

Rub Flat Varnished Surfaces by Electricity

APPEARANCE sells about 90 per cent. of all goods. It's a silent salesman wielding a mighty influence. If a piece of furniture is nicely finished, showing a uniform high polish, the prospective buyer cannot help but admire it. But anything suggestive of hurried or inferior workmanship is quickly passed up.

A perfect finish, can, of course, be procured by hand methods, but it is a hard, tiresome, and expensive job, and is likely to be slighted, especially in the production of cheaper lines.

No manufacturer can afford to pay a premium for hand work, and then run the risk of having poorly finished goods displayed alongside those of a competitor who has produced a uniformly beautiful finish by mechanicai methods

Competition demands that every item which will add to the stability of our products be given close, analytical study. Is there room for improvement in your finishing methods?

Wherever there are flat, horizontal surfaces to be rubbed, the "165" Portable Electric Rubber will do as much as two men rubbing by hand. This picture shows the Mattison Electric Rubber putting a fine finish on high-grade buffets. The Machine operates from any electric lamp socket, consumes little current, and is easily guided over the work. Its weight is correct for producing highest grade work, and no extra pressure is necessary.

MATTISON
MACHINE WORKS
Rockford, Illinois, U.S.A.

Advantages of Varnish Drying Equipment

Enables Production Schedules to be Maintained—Conserves Floor Space in Finishing Department—How Small Units Would Aid Production

By John R. Ballem

The output demanded from the modern finishing room necessitates special varnish drying equipment. This is so in order that this department may keep pace with the increased productiveness of the other divisions of the plant without requiring a large amount of floor space, with approximately higher finishing costs due to the extra handling entailed.

In any plant in which a definite, scheduled output is attempted varnish drying equipment is certainly desirable if not absolutely essential. If such equipment is not installed a certain factor of safety in the form of surplus finishing room capacity must be provided to take care of the lag which occurs during the periods when the rate of drying is retarded by poor drying conditions. This is easy to understand when one considers that the atmospheric conditions vary from time to time, sometimes being favorable to quick drying and again resulting in extremely slow drying. When varnish kilns are in operation all this is changed for the drying conditions are then under control and may be held constant at any desired point. This means that every day may be made ideal drying day.

Various Types of Drying Kilns

Many different types of kilns or drying rooms are to be found in various plants. In some cases they are nothing more or less than heated rooms, in others an attempt has been made to introduce humidity, while still others include fans to supplement the natural circulation. As in the drying of lumber the three essentials are controlled, temperature and humidity coupled with adequate circulation. To this extent, at least, the two drying problems are identical. However these are features involved in each that are not factors in the other.

Naturally the air used in drying the finishing coats should be as clean and pure as possible. While air containing dust and other impurities would give the same result as far as drying is concerned, the horizontal surfaces and to a lesser degree the vertical parts would be liberally sprinkled with this dust or whatever it might happen to be. This is extremely undesirable, involving considerable extra sanding and rubbing as well as tending to mar the finish. For this reason it is well to look to the source from which the air is taken or secured.

Removing Impurities from the Air

This factor has led to the development of special varnish drying apparatus in which the air is thoroughly washed, so that all dust and impurities are eliminated. This seems to provide a very desirable form of varnish drying equipment for regardless of from where the air is taken, whether inside or outside the plant, it stands to reason that it is bound to contain a certain quantity of dust. As it passes through the water spray or whatever form of washer is used all this dust would be removed, ensuring that none but clean air is circulated around the articles in the kiln. This works out in favor of a better finish.

It has been found in varnishing and loading in the kiln preparatory to drying that the last articles to be placed in the kiln are the ones that have the hardest, dryest coat when taken out. This may seem peculiar at first thought, for it stands to reason that those pieces that were varnished first would have dried some before the kiln was closed and the heat turned on. The explanation is that in drying before the heat and humidity was turned on a coating or skin is formed on top of the varnish coat that actually retards the drying when the kiln is closed. The last pieces to be varnished, not having this skin, dry from the bottom out quickly producing a hard dry surface.

Advantage of Small Units

This suggests that the varnish drying kiln might advantageously be divided into a number of small units, say sufficiently large to accommodate about two hours output from the spray machine. When this is done there is not time for a skin to form before the kiln is closed and the humidified air is in circulation around the articles. As is well known the purpose of the humidity is to prevent surface drying or in other words the formation of a skin, so that the coat is dried thoroughly from the bottom outward.

Another advantage of having the drying equipment in small units is that the length of time the stock is in the finish room can be reduced considerably. Many of the varnishes in use today are of the quick drying type developed particularly for use in varnish kilns. Many such varnishes will dry thoroughly in six hours, sufficiently hard to enable another coat to be applied. This often means that the articles which were varnished first thing in the morning could be given another coat just before the closing hour, a clear gain of twenty-four hours on two coats of varnish. In addition with smaller drying units the pieces could be shoved in for a few hours after staining and filling enabling these two operations to be performed with a minimum of time between them. This also would tend for increased output from the finishing department.

Aiding Levelling of Coat

Another point that enters here is that where the stock is varnished and allowed to stand around for hours in a comparatively cool finishing room or varnish kilns, the varnish coat does not have the same chance to flow out evenly and equalize as where it is placed right in a kiln and the heat turned on with very little delay. This suggests that it might be practical to arrange some kind of a canvas curtain or flap over the entrance through which the kiln is being filled. If that were done the heat and humidity could be turned on right at the very start and then the articles would be carried right from the varnish sprayer to the warm kilns with only a few minutes elapsed time between the application of the varnish and the application of heat in the kiln. This would seem to tend for a better finish and would perhaps go a long way toward eliminating that roughness so often noticeable on a sprayed varnish surface. If this would work out as suggested it would tend to speed up the rubbing operation for the rubbers would have a bet-

(Continued on page 76)

The Products of Cutler are Sanded with Carborundum Brand Garnet Paper and Cloth—

ONE hundred years ago Abner Cutler began his life's work of making fine furniture in a little shop at Buffalo, N. Y. From this humble beginning has grown a great industry—The Cutler Desk Company, manufacturers of desks and office furniture.

For one hundred years Cutler workmen have been trained to the ideal of the Cutler quality. Styles and designs have changed many times during that period but Cutler quality has always been of the highest standards set by good cabinet making.

Carborundum Brand Garnet Paper and Cloth do the sanding in preparing Cutler desks for the clear, beautiful finish for which they are noted.

All through the finishing departments you will find Carborundum Brand—on the single and three drum sanders, on the belt machines, in the hands of the men who use the cabinet or finishing paper.

Carborundum Brand Garnet Products are in this plant because they not only help keep up Cutler production but give a finish that is in keeping with the Cutler ideals of quality.

You will find Carborundum Brand Garnet Products in practically every worth while plant, big or little, because—

Carborundum Brand Garnet Products Make Good Sanders Better Sanders

The Carborundum Company
Niagara Falls, N. Y., U. S. A.

Can Your Salesmen Sell at 2c. per Call?

A full page advertisement telling the Canadian dealer about your latest designs and prices can be purchased at approximately two cents per monthly call.

You cannot reach him for less money in any other manner and you cannot "talk" to him through such a satisfactory mouthpiece as through the "Furniture World" which he subscribes to as a business necessity.

The dealer advertises his service in the newspapers and buys from the "Furniture World" goods that he believes will be satisfactory for his customers.

He cannot afford to stock furniture that he has not seen described in his business paper.

97% of Furniture and allied lines are sold on the recommendation of the Retail Merchant

In the eyes of the Consumer he is responsible

Reaches furniture dealers all over Canada every month who use it as a buying reference and guide.

The Furniture World is to the furniture dealer as the Canadian Woodworker is to the furniture manufacturer.

Let us tell you of the opportunities that await

Furniture World
349 Adelaide Street West
TORONTO

Upholstering and Trimming

Coverings for Chairs and Couches

Variety of Material on Market Enables Upholsterers to Cater to Individual Requirements of Retailers

By J. A. Hunter

A certain latitude in the choice of chair coverings has been claimed in all periods and not least in those before the late seventeenth century, when upholstered chairs came definitely into common use. The loose cushions and hangings of still earlier times may well have been as various as the tastes of the large number of women who spent their leisure in making them. Upholstered coverings began with a preference for rich materials, if we may accept as typical the very earliest English upholstered chair, preserved in York Minster, velvet-covered over leather; and embroidered velvet was manifestly used for chairs in the great houses of the Tudor times.

Richness of costume and of upholstery consorting naturally together, ornate materials, including needlework, Italian velvet, and damask, were used liberally under James I. Under Charles I a proclamation called on English people to give English velvets, damasks, and satins their preference. Velvet, needlework, leather, horsehair, damask, and camlet all appear upon chairs of the Queen Anne period, and by that time the custom of matching bedroom chairs with the hangings of the apartment was widespread.

Preferences of Old Masters

Variety of upholstering materials had the countenance also of the masters whom all furnishers are content to follow. Chippendale's expressed preference for Spanish leather or damask, with a finish of brass nails, appears not to have been inconsistent with the use of watered worsted moreen. Hepplewhite held horsehair, plain, striped, or checked, to be the proper upholstery for mahogany; and silks and satins in light colours and stripes for drawing-room chairs, with printed or painted medallions for the backs. Easy chairs he would have either in horsehair or leather.

Robert Adam after a time ceased to leave upholsterings to the choice of the client, and bestowed a meticulous care upon the colour and pattern of his silks. Sheraton, nearer to our own day, lent his favour to printed cotton and plain, striped, checked, flowered silks and taffetas, set off with metal threads. Printed silks or chintzes for parlour chairs, oval medallions or stripes for drawing-room chairs, and a pronounced affection for blue, were distinctive of his taste.

Shadows of all these past preferences and of the fondness for plain solid-coloured velvets, satins, and damasks, with the braids and ball fringes characteristic of the Empire period, can be traced to-day. The tastes of all the ages have been inherited, and although artistic ingenuity and invention had their period of decay, their growth is once more vigorous. To all the old materials are added all the new ones. The morocco and polished hides of old standing are eked out now by leather cloths of a perfection rendered possible only by the latest advances in chemical science and the new possibilities found latent in that world-old material—cellulose.

Horsehair Gaining in Favor

We still have rushes and cane, and the designs of the best periods of Italian art come down to us not only in silk, but again in mohair figured velvets, and in brocades made on the old models in the best both of natural and artificial silk, to say nothing of the improved dyed cottons giving the hardest wear at the lowest price. Needlework and hand-frame tapestry, although they are not everybody's bargain, are to be had as well now as at any time, even if their replicas in machine-woven tapestry have taken their place in upholstery for the people. One or two of the plain stuffs of former days may be missing, but their absence is nominal rather than actual. The "taboray," for example, of Hepplewhite is a familiar term no more. Was it a moire stuff or plain? His "morine" was, with hardly a question, moire worsted, ribbed on the face, shiny on the back, and with water-markings. The absence of any such coverings is more than made up by the new profusion of fancy repps, and if water-markings are wanted the supply presents no difficulty.

A generation now passing learned to abhor horsehair, as they remember it in farm-houses and seaside lodgings—black, shiny, imperishable, but quite anti-ornamental stuff. Coloured and as a seating for smoking-carriages, horsehair was found cleanly and unobjectionable to the eye. Improvement of the colourings and a nicer choice in weaving have brought horsehair seating for domestic chairs well into favour. A jaspe effect of softly coloured stripings is now obtained, pleasant enough to secure hair-covered chairs a front place in Tottenham Court Road. The horse is a vanishing animal, and supplies of tail hair will at some date present difficulty, but artificial horsehair, made on the same system and from the same material as artificial silk, is available. The characteristic appearance of horsehair combined with undoubted durability can be encompassed by the new material.

Velvets Extremely Popular

English chair-covering began with velvet, and to velvet it is returning at a great rate—witness the vast profusion of moquette-covered suites. Moquette of the same general character as that used for the new sitting-rooms forms the seating of the latest type of London motor-bus, replacing the woven cane of the previous series. Velvet pile may or may not be more sanitary than some of the materials it replaces, but evidently it is much to the present taste. Richly figured and coloured silk velvets are bought at high prices for luxurious salons and these cheaper

mohair moquettes in neutral ground colours with neat woven patterns crowd the popular market. It is no disadvantage, at any rate, that raw mohair is relatively cheap. Its resilient pile is in the nature of a cushion, and as the wear is taken rather by the ends than the sides of the fibres the material is especially durable.

The return to velvet is marked in other directions than the covering of chairs, notably in the sale of mohair table covers and mats and in that of the velveteen loose cushions which go so well with Jacobean hides, and accompany morocco and other coloured leather suites. Corduroy is another velveteen, and not even its associations with hard work preclude its use on adjustable chairs, made by the thousand.

Increasing Variety of Damasks

The seating of London's newest super-cinema in damask, instead of velvet, is only one sign of the contest between these materials for first place. One should go back twenty years to realize the greatness of the change that has come over the production of damasks in this country, and especially in the growth of variety. More designs, more colours, more machines, more raw materials, and energies as well as capital have come into the business. For sufficient reason the classical brocade models are followed most, but the development is unmistakable and it has given a choice of many damasks, at prices within easy reach, where formally there were few.

If damasks, thanks to their smoothness and lustre, cover more new suites than do tapestries, that does not mean that tapestries are lost sight or that householders in looking for occasional chairs do not seek tapestry covers, more or less to match those already doing service. The turn that fashion is taking in flowered velvets, continued a little further, is not unfavourable tapestries, and these are, or can be, made in England upon a larger scale than before the war.

Contrary opinions as to the desirability of finding many sorts of chair-coverings saleable at one time are tenable. The instinct of the natural man is in favour of contentment with a few, but the upholsterer dependent upon the public has to bow to public demand. Large stocks of covers that will presently be unfashionable are liked by no one, but certainly general interest in furnishings is increased by the sight of a judicious selection from widely contrasting styles. The appearance of furniture shops has gained in more ways than one from chairs covered with the bold stripes of strong colours obtainable both in woven repps and printed cretonnes, and it is not inevitably the most costly investments which make most impression upon the public eye.

Selection of Coverings not Simple Matter

Retailers might choose to lend their displays an air of up-to-dateness rather by small accessories than by the covers of suites, and they are bound to consider to how many pockets some particularly striking pattern will appeal with practical effect. Justice has somehow to be done to the variety of alternative materials and, after all, covers are a more adjustable matter than cabinetwork. Pains should be taken to make it known that suites covered in one material can be had in some other, and it is often possible to work from manufacturers' stock.

Classical examples afford a sense of safety which cannot be reposed in sheer jazz, and any evidence of a purifying and simplifying of taste is important. In this light, the favour shown in representative quarters towards chintz colourings and Jacobean tree motifs in the design of cretonnes is especially significant. Cretonnes are firstly for loose covers and hangings, but they are a key material and one in which the range of variety is nearly infinite. There is this tendency at one end, and that towards French canons at the other, and both are deserving of remark. They have to be related to the rooms to which they belong, to the woods in use for furniture, the period temporarily uppermost in favour, and still more to a sense of comfort and homeliness which counts more with most people on the whole than any pedantic artistic fitness.

The variety of materials is simpler than the variety of tastes, of classes, means, and opportunities among those who are counted upon eventually to buy, and it is with those differences before their eyes that the trade regard the multiplicity of materials that are put forward for their selection.

Improvement in Furniture Market

According to reports received from various sources by the "Canadian Woodworker" the demand for furniture is showing a decided increase. This is taken to be the forerunner of a satisfactory fall business. The improvement in demand is being felt by all branches of the industry, though in varying degrees. The first to feel this revival in buying were the manufacturers of wood novelties, and other lines that are particularly suitable for Christmas buying. This is only to be expected for the retailers should have such stocks on their floors at an early date if they are to take full advantage of the opportunities offered to supply the demand for Christmas gifts. However, this improvement is extending on down the line, and while the manufacturers of case goods were the last

WORK

Without work no amount of talent, no amount of influence, will carry a man very far in this world. I am amazed at the point of view of some modern young men. They look at the successful men of the day as if they supposed success to be an easy master—giving rich gifts and requiring little in return. I wonder what they would think if they could see the average day's program of one of the men they envy. Theodore Roosevelt left a correspondence that of itself involved more work than the average man does in his active life. Yet it represented only a small part of his activities.

"The higher men climb, the longer their working day. And any young man with a streak of idleness in him might better make up his mind at the beginning that mediocrity is to be his lot. Without immense, sustained effort he will not climb high. And even though fortune or chance were to lift him high he would not stay there. For to keep at the top is harder, than to get there. There are no office hours for leaders."—Cardinal Gibbons.

to feel the effects of it, yet even in this line it is safe to say that business is decidedly better.

As far as can be judged the retailers must enter the market in considerable numbers for they have enjoyed on the whole a fairly good trade during the summer and early fall months, with the result that their stocks must be low, in fact in certain lines it is doubtful if a creditable showing can be made in many stores. With this in mind it is difficult to see why there should not be a strong demand for furniture of all kinds, and why this demand should not continue until late in the fall.

Forecasts Continued Building Activity

The great war crop of 1915 has been left behind by a hundred million bushels. The vast flood of grain is moving eastward from the prairies from what is estimated to be the greatest harvest in Canada's history. A leading paper poignantly says, "If the people of this country were not so strangely predisposed at this time to suspect that every egg is addled and that every to-morrow is going to be a disagreeable day, the enormous crop of 1923 would set this country singing from coast to coast, and everyone would begin to be as busy and happy as bees in clover." Business generally is taking on a rapidly improving aspect, and to observe another significant sign, one need but reflect that unemployment has almost ceased to exist in Canada. Immigration is on the increase and there will constantly be more people to shelter.

Contemplated new construction reported during September totalled $50,779,000, or $11,702,200 more than a year ago. There seems no room for doubt now, but that activity for the rest of the building year will be considerably higher than had been rather commonly expected.

Pronounced activity has been in evidence this year in the construction of public works and utilities. During the first nine months of 1923 contracts were awarded in the Dominion for 219 bridges, costing $3,738,800; 66 dams and wharves, $3,379,200; 190 sewer and water systems, $3,677,200; 1087 road construction contracts, $37,809,100; and 250 general engineering projects, costing $28,025,000. This represents a total of $76,629,300 expended on engineering developments alone, or $24,630,300 more than during the same period of 1922. With the return of lower interest rates, provinces, counties, municipalities, railroads and certain other corporations will now institute building programs which have been latent for many years. It is now more than ten years since interest rates have been as low as they are to-day, and this condition will likely become more favorable during the next two years.

The total awards for Canadian construction for the month of September, according to MacLean Building Reports, Limited, were $23,382,100. While this total shows a falling off of $4,106,600 from August, it must be remembered that the autumn is a period of completion rather than inception of important new work. The decline is natural and seasonal. Residential building accounted for 34.7% of the September total, and amounted to $8,091,300. Business building amounted to $5,374,200, or 22.6%; industrial building, $816,700, or 3.8%, and public works and utilities, $9,099,900, or 38.9%.

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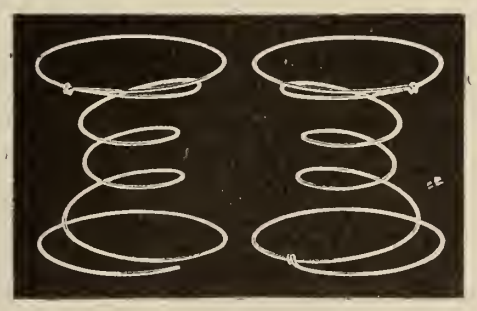

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Veneers and Panels

Experiences in the Veneer Room

How Thick Panels Were Saved—Jointing Veneer on Edge Sander—Conserving Crossbanding

By Observer.

Some time ago the veneer room crew in a certain factory made a mistake that looked serious at first glance. A dozen pianos were being veneered with some particularly choice figured walnut veneer and when the cases were being assembled it was discovered that the front fall-boards were too thick. The veneer had been laid on the wrong cores, and there was none of that particular veneer available to veneer a fresh lot of fall-boards. The veneer room foreman acknowledged his blunder, which was hardly necessary, and stated that the only course open was to acquaint the superintendent with the sad news as he, the foreman, had no suggestions to offer for rectifying the error. It was one of those things that had got by in spite of watchfulness. The tags had got switched when the cores came up from the machine room.

The superintendent had very little to say when he made his appearance. He realized that every man is likely to make a mistake sometime, and there would be nothing gained by giving the foreman a calling down. So, instead of resorting to a tongue thrashing he put on his thinking cap, and the idea evolved in his brain is certainly worth passing on. He ordered the fall-boards to be taken down to the resaw, and had them split up the centre. When this operation was finished he sent them to the surfacer and had the halves dressed down to the proper thickness so that when the two pieces were glued together they would measure up correctly. In this way the veneer was not interfered with and everybody was happy.

It was a simple solution, but no one else had thought of it. It would have been impossible to select veneer that would have matched up with the balance of the case. Of course, it was fortunate that the fall-boards were of the flat type, but then if they had been the familiar curved ones the mistake would never have occurred.

This incident seems to prove that when a difficulty arises it pays to lay the matter before a man with experience, and that man is usually the superintendent.

Make Butt Joints on Edge Sander

A piano factory located in Toronto has a good method for making joints on butt walnut veneer. This is done on an edge sander. This machine is no doubt familiar to all readers of the Canadian Woodworker; the belt runs past a metal plate so that when edges are to be squared the belt is forced against the plate which is machined perfectly true.

The veneer to be jointed is clamped between a couple of strips of wood, perhaps a dozen and a half sheets at a time, and the ends to be jointed held against the sand belt. Any unevenness is very quickly sanded off and the joints are made perfectly true.

It is a simple operation and a very effective one. The only other methods of making this type of joint that I have seen are a hand plane and a regular veneer jointer. Making butt joints with a hand plane is a slow proposition. It is necessary to clamp the veneers between blocks on a bench, but the big problem is that in the trimming to size the ends to be jointed are usually chipped, sometimes an eighth of an inch in from the end, and if that amount of wood has to be planed off it takes considerable time. Jointing veneer from butt joints on a veneer jointer is not a simple matter. In order to prevent the cutters chipping the end wood it is necessary to put a piece of waste stock about an eighth of an inch thick each side of the veneer to be jointed. This, of course, takes time and hampers production.

The belt sander method, is by far, the best solution that I have seen. If the ends of the veneers are chipped the eighth inch or so which has to be removed to produce a true edge is quickly removed on the belt sander, and by holding the stock against the machined plate, with the sand belt between, a perfect joint is obtained. Try it for yourself if you have butt joints to make.

Taping By Hand

The man in charge of the veneer room in a Canadian piano factory gets through a lot of taping in a day, and he has no taping machine either. After his joints are made he lays two pieces of veneer on his bench with the jointed edges together, and joins them for their entire length by putting short pieces of gummed tape crosswise at intervals of a foot or so. Then he has a boy fill in between these pieces with tape to cover the joint lengthwise. By putting on the cross pieces himself the man in charge is sure that the joints are properly drawn together.

The veneer is not tacked on to boards as is the usual custom with hand taping, and in this way tack holes are dispensed with. This is a big advantage as tack holes, no matter how careful the veneer man is to prevent them, are very unsightly when the veneer has been laid and they show up in the finished work. Tack holes can be remedied to a certain extent by using only new tacks with very sharp points and being careful that only the point is allowed to pierce the veneer. Then when they are removed the veneer should be turned over and the slight burr caused by the tack forcing its way through can be tapped down in its place with a fine pointed tack hammer. This prevents the glue coming through the holes when the veneer is laid on the cores, and it is the glue that causes the tack holes to show up so prominently.

Single Veneer for Best Work

Some years ago when the Canadian Woodworker held its essay contests one of the winning essays dealt

with the laying of four veneers at one operation, the crossbanding and the face veneer. That system has largely passed into discard, for high grade work at any rate.

It was thought to be a wonderful time saver when first introduced, and its introduction was almost coincident with the general adoption of the glue spreader. However, experience has shown that better results can be obtained by laying the crossbanding first, allowing it to dry thoroughly, and then preparing the surface of the crossbanded stock by sanding preparatory to putting on the face veneer.

It stands to reason that if there are any inequalities in the thickness of the crossbanding they should be removed before putting on face veneer. This cannot be done when the two veneers are laid at one time. The result is that the inequalities transfer themselves from the crossbanding to the face veneer and when this is sanded in preparation for the finish the sander cuts through the face veneer where the inequalities occur, and the stock has to be patched up or veneered over again. Thus, all the time saved at the beginning, and more, may be lost. There is plenty of evidence to bear out this contention if anyone interested will just make a tour of inspection of some of the factories turning out really high grade veneered work.

Much Crossband Stock Wasted

This may be as good a place as any to insert a few remarks on the proper handling of crossbanding. These are the result of observations made in many veneer rooms. Crossbanding is handled very carelessly in most plants. It is very easily broken and for that reason one would think it would receive special care, evidently the fact that it is a cheap commodity in comparison with face veneer has earned for it a certain contempt.

In many factories you will find the crossbanding lying in piles where it gets tramped over almost continuously. As the sheets get broken they are taken by the veneer room crew and broken up finer for removal with the other waste material. It would be interesting to know how much crossbanding is destroyed annually in this way. The value would cause a few surprises.

If the pieces that get broken accidentally were carefully gathered up and placed to one side to be jointed and taped later a great saving could be effected. If a jointer and taping machine are part of the equipment this is easily done. By piling crossbanding in some part of the shop where it will not be abused by clumsy individuals walking over it, and by repairing the pieces that get broken accidentally, one of the noticeable leaks in veneering rooms will be checked. Very few plant owners realize how much of their stock is destroyed for want of a little care. The crew of the veneer room are careful enough not to deliberately damage stock when any one in authority is around, but they take no notice of a mere stranger.

The next thing in regard to crossbanding, and a very important thing it is, is lack of drying. Most veneer room men think that if they store the crossbanding in a dry room for a time before they use it it is plenty dry enough. It might be if it was stored there long enough, but too often it is not stored in a dry place long enough for the moisture to be removed. Crossbanding should be as carefully dried as the face veneer. I have often seen crossbanding brought from a damp basement or out-house and after only a few days in a dry part of the factory it would be laid on the corestock without any additional drying. A few days in a dry room at ordinary shop temperature is of practically no use whatever.

A little good might be done by separating the sheets and spreading them around, but in most cases the stock is allowed to remain in the pile just as it was removed from the crate. There are the sort of things that require careful supervision. Someone in authority should be made responsible for watching details of this kind as they can cause incalculable harm.

How to do Better Veneering

Overheated Cauls Fruitful Source of Trouble—What is Best Thickness to Use?

An interesting insight into the way veneering problems are viewed by British cabinet makers may be secured from the following article which appeared in a recent issue of "The Cabinet Maker." While this is written with a view to the final results secured in the finishing room, yet it does not look as if the methods and equipment commonly employed in our own plants are to be found in the old country shops. The reference to thin veneers may give food for thought as the suggestion is often made that 1/28 in. and 1/20 in. we use are not heavy enough to stand up to good advantage:

Wood, the main raw material of the furniture trade, is so variable in its habits that they cannot be gauged with mathematical precision, nor can the peculiarities of wood be ever thoroughly understood, and exact allowances are made for those peculiarities by scientific deduction. It consists of a mass of cells, tubes, and fibres composed of complex organic chemical substances; wood has its distinctive alkalies, oils, and protoplasm, all of which are influenced by atmospheric changes—heat and cold, draught and damp. It is, therefore, of the utmost importance to the cabinet maker to study its habits, and, as nearly as possible, with the knowledge at his disposal, to work in concert with its peculiarities, and all the precautions dealing with boards are doubly necessary in the case of veneers. For example, in no circumstances should any veneer be used as it is received from the veneer factory. It should always be redried. Endless trouble may be caused where this operation is omitted, and if cabinet makers will appreciate that an undried veneer after being laid may shrink in the drying a further 1/8 in. in 15 in., they will realize that this is one of the main contributory causes of the broken-up surface of a veneer which causes so much trouble in the polishing shop. But whether it is necessary to redry veneer, precautions should be taken against baking it or making it so hot that the nature of the wood is destroyed.

Selecting Suitable Stock

Lack of knowledge and general carelessness in purchasing and selecting suitable veneers are the

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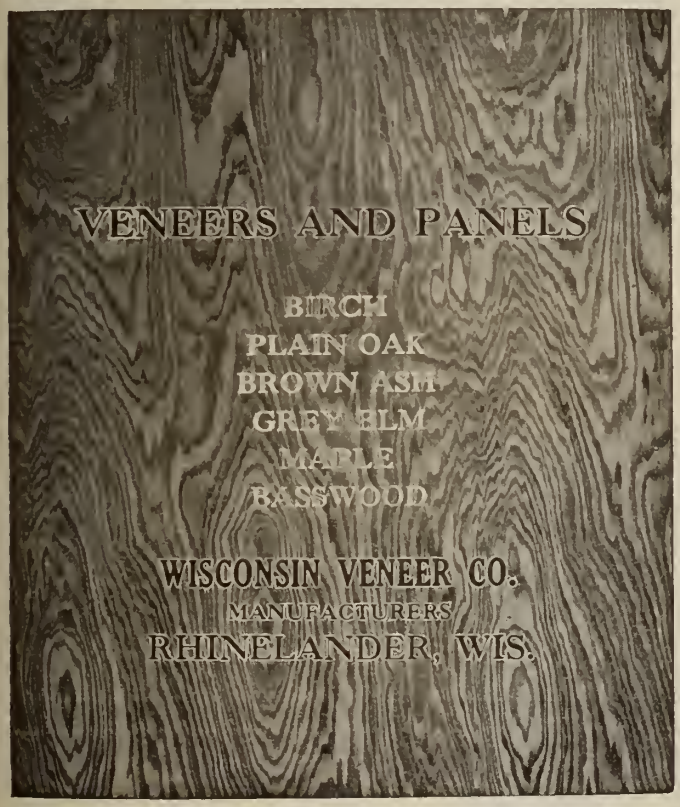

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most frequent causes of trouble in subsequent operations. The wrong selection and the wrong treatment of these delicate sheets of wood lead to disaster. Some woods take a polished surface better than others, but whatever wood is chosen, it is necessary to employ the same rules of careful selection and treatment. To begin with, it must be insisted that for high-class work all veneers used are cut on the quarter. No veneer machine has yet been discovered that can cut a veneer across the crown or heart of a log without cutting one side more smoothly than the other. On that side where it is not smooth the grain is destroyed and broken up or "plucked" in cutting and is therefore unfit to take a fine finish. The veneer when cut must be almost as smooth as if it had been sanded, and should have no marks, scratches, or ribbing of any kind. If such defects are discovered in veneers (and a certain proportion cannot be avoided), turn them out to use for "backing up," or even burn them rather than use them on work which is to take a high finish.

Having selected such a suitable veneer and carefully redried it in a warm and well-ventilated room, the next care is to lay the veneer the right side up, for a veneer has always a right and a wrong side and should always be laid with the rough side downwards. It is quite easy to tell when veneers are taken into store, for the top veneer of a bundle is invariably marked, showing the contents and footage of the bundle. This is always done on the rougher side, and the veneers follow all the way through the bundle. The side that is marked, therefore, with a letter or number is practically without exception the side to glue down to the wood.

Thin Veneer Advocated

The next consideration is the thickness of the veneer. It must not be too thick, because if so the grain and fibres of the wood will be very "distressed" in the process of cutting; on the other hand, it must not be too thin, otherwise the glue comes through too freely. A veneer 1/30 in. thick answers these objections and is the best thickness for high-class work. The wood of the veneer must be hard of texture, dense and heavy. Some woods are nearly grainless and few pores are visible to the naked eye—such as holly, peartree, boxwood, W. I. satinwood and chestnut, etc., while on the other hand we have the open-grained wood showing large pores, such as the so-called soft woods and in the hard woods—rosewood, some types of African mahogany, and oak. If such a veneer be selected, and of the thickness mentioned, a minimum quantity of glue will come through the veneer when it is laid and pressed.

It must be observed that where there is great porosity in the wood the glue comes through freely, and the pores will be chocked with it, and present on the surface (after cleaning off) a mass of minute glue spots into which the filler cannot penetrate, and on which the polish is applied. This is highly undesirable, and can very largely be avoided by using a well-cut veneer of close texture and substantial thickness.

The danger of overheating the cauls and over-pressure when the veneer is laid must now be insisted on. Some methods of heating cauls are very crude, and a means should always be found to keep the temperature down to a minimum, and to know what temperature is being employed. Cauls which are too hot destroy the veneer and glue, and unnecessarily destroy the groundwork. A caul may be heated to, say, 100 deg. to 105 deg. with safety, but on no account should the heat be allowed to reach 125 deg. to 130 deg. The writer is conversant with one instant in a factory where the caul was actually heated to 165 deg. There seems to be an idea that it does not much matter how hot the cauls are; but a caul which is too hot destroys the glue and is one of the premier causes of the veneer blistering. Secondly, the cells of the wood are distorted and drawn out of shape, and thirdly, the glue is drawn through too freely to the surface. More wooden cauls should be used as the temperature of these is bound to be "kind" to the work being pressed.

Pressure Should not be Heavy

Now referring to pressure. A minimum pressure only should be employed, a heavy pressure on the veneer with a metal caul facing the wood can only result in a compression of fibres in the face veneer, groundwork, and even the core. This compression is not permanent and constitutes a very real danger, for as the compressed wood tends to resume its normal form, a distinct movement takes place which is obviously fatal to the subsequent polished surface.

The damaging "hair cracks" (or little shakes) and, in fact, most of the defects in polished surfaces, are caused by a number of factors, each perhaps in itself almost negligible, yet each being contributory (or alone responsible for the faults observed in polished work, and it is thus necessary to investigate every detail to bring about a desirable result.

Veneering with Cardboard Caul

"Having occasion to veneer four quarter circle table rims with sliced mahogany veneer, I tried the following method with perfect success. I took a piece of thick cardboard slightly over a quarter of an inch in thickness, and having warmed it, I used it in place of a wooden or zinc caul, as is commonly done. During my twenty years' experience in cabinet making I have generally gone to the trouble of cleaning up the inside of the sweep which has been sawn off the curved rim and used this as a caul with which to lay my veneer. By using the thick cardboard, which easily springs and beds to the required shape with the aid of the handscrews, I saved over an hour's hard work and unnecessary cleaning up of a caul piece. For small work it is worth a trial!"

Annual Financial Review

The "Annual Financial Review" for 1923 has recently made its appearance. It is a carefully revised compilation of facts regarding Canadian industries, containing within its 792 pages a mass of data relating to companies whose securities are sold on the stock exchanges of the country. For the business man or the investor, the book offers a most valuable service by acquainting him with the status of companies and business institutions operating in Canada and indicating the price trend of their stocks over a period of 10 years. The book, which is now in its 23rd year, is published by Houston's Standard Publications, Toronto. The cost is $10.00.

When quality is passed up for a low price, you are simply mortgaging the results which you expect in service and thereby assume the risk of losing far more in the end than you thought you were gaining in the beginning. Quality machinery always pays big dividends.

The C. L. Willey Company

Past and Present

CAMERON L. WILLEY

CHARLES B. WILLEY

Cameron L. Willey was born at Dansville New York, in 1856. The descendant of lumbermen, he had the traditions of the craft in his blood. Mr. Willey established the C. L. Willey business in Chicago in 1890. It grew rapidly attaining rank as the largest veneer manufactory in the world. Mr. Willey and his business became famous in veneer circles on many continents. His demise came November 28, 1916.

CHARLES A. SNAPP
President and General Manager

Charles B. Willey's sudden death at the age of thirty-seven prevented his personally carrying on the business of his father. Growing up under such exacting environment his training was thorough in every particular. After several years in charge at the big Memphis plant he returned to the Chicago factory succeeding his father to the presidency on the death of the latter. He died November 27, 1920.

JULIUS T. SPICKER
Vice President

HECTOR ROBERTSON
Assistant General Manager and Sales Manager

EARL VAN
Jamestown Office

WALTER B. VAN
Mill Manager

CARL HIPELIUS
Chicago Territory

GEORGE TAMM
Office Manager

S. C. ERIE
Central West Territory

JONATHAN SMITH
Rockford Office

THIS PILE OF AFRICAN MAHOGANY LOGS IS ONE OF THE FINEST LOTS EVER RECEIVED IN THE COUNTRY. IT CONTAINS 500,000 FEET AND ARRIVED IN A SOLID TRAIN OF FORTY-FIVE CARS

The memory of men's deeds is variously preserved. Some men dwell with a full measure of ostentation on what they have achieved. These are likely to acquire such conception of their importance that during life they arrange for fitting memorials, hoping to inspire some measure of emulation after they pass on.

Others possibly more modest, remain, in the midst of many evidences of supreme accomplishment, plain and unassuming. They appear devoid of more than ordinary appreciation of their own worth and conscious only that life can contribute no greater satisfaction than that derived from performing each appointed task with unqualified integrity, with generous regard for others, and just a little better than anyone else. Such men need not found institutions or provide in their wills for garish mausoleums in order that their names may remain ever fresh and inspirational.

The Founders

The late C. L. Willey, who thirty-three years ago founded in Chicago what became the largest veneer manufacturing plant in

SOME OF THE FINEST MAHOGANY AND WALNUT LOGS THAT EVER GREW ARE PILED ON THE LOG YARD. THIS GROUND HAS HELD MORE MONEY IN PRECIOUS WOODS THAN ANY LAND IN THE WORLD

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the world, fits the second category. His was the guiding mind and the guiding personality of the organization which grew up around his name. The things he did and the way he did them constitute the reason why the C. L. Willey Company has continued with scarcely a check or a jar since his death seven years ago. Adverse developments which would have wrecked any organization not possessed of the momentum of this were successfully met.

It is a truism to say that the late C. L. Willey is still a live factor in the policy of that organization, which without his conscious planning became his real monument. The influence of his personality is not expressed through perpetuation of dogmatic regulations and traditions fitting and applicable at the time evolved—unelastic and obstructive under modern conditions. Instead he bequeathed to the business an ideal, which, because it creates a sympathetic response in the heart of any real man, as well as because it has been proved to constitute plain, good business, is and will continue to be the dominant motive in the policies and

AN EXCEPTIONALLY FINE GROUP OF AFRICAN MAHOGANY AND FIGURED WALNUT LOGS. THE WORLD-WIDE REPUTATION OF THE WILLEY NAME HAS BEEN BUILT ON SUCH SPLENDID LOGS AS THESE

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the every-day practices of the organization which survives it. C. L. Willey's personality is an ever-present factor in each department of the C. L. Willey Company. Mr. Willey established an international reputation for his keen sense of log value. He invariably insisted upon the finest selection of raw material as assurance that his customers might in turn be provided with the best possible quality of veneers and precious woods in lumber. That phase of the business has been carried forward with consummate care and consummate attention to each detail which might contribute to perpetuating this reputation.

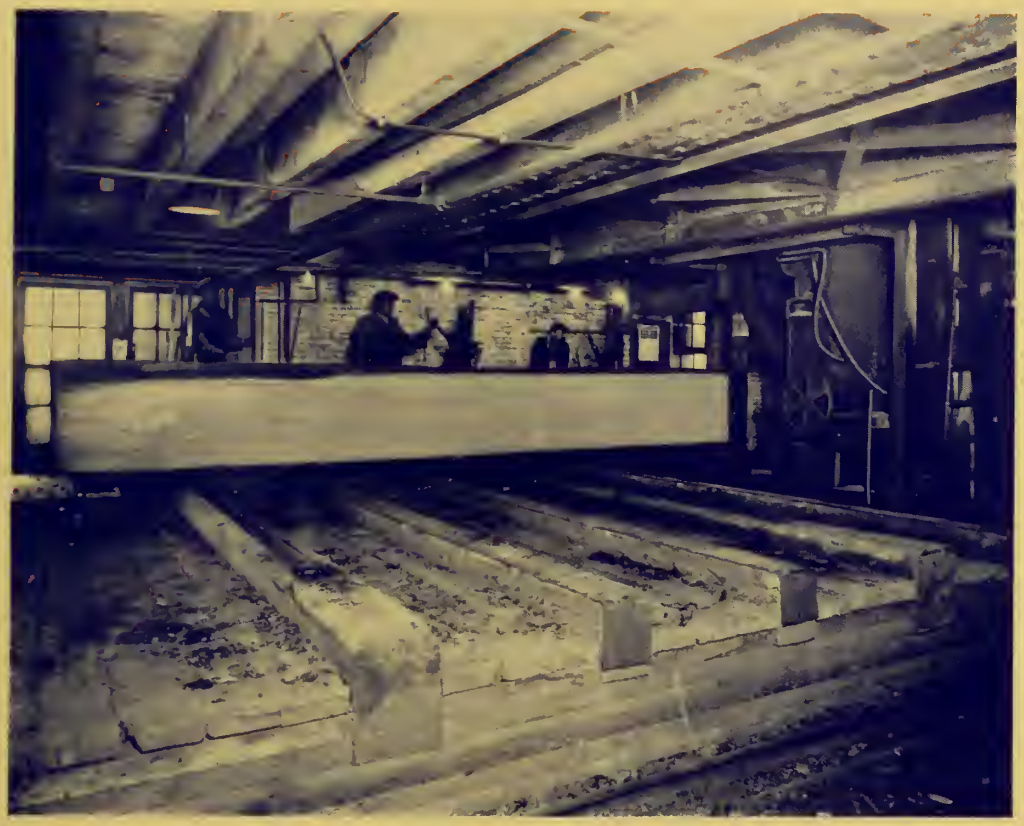
Present Management Earnest and Aggressive

Mr. Willey's manufacturing activities were based on an unceasing study of equipment and methods and on an ever-present endeavor to bring the organization to greater perfection in its operation and to greater loyalty to his high-minded business principles. Through the untiring efforts of Charles A. Snapp, who is now president, this policy is being carried forward in a manner that would bring pleasure to Mr. Willey were he here to observe.

ONE REALIZES AT FIRST GLANCE THAT THE WILLEY PLANT IS NO MERE VENEER MILL. THIS PICTURE SHOWS ABOUT HALF OF THE HUGE FACTORY WHERE WILLEY VENEERS ARE CUT

The C. L. Willey selling organization has long been known as the training school of the veneer and fancy wood industry. His sales department acquired that recognition because his methods were outstanding in their practical efficiency and in their cognizance of buyers' interests. Mr. Willey was looked upon not only as the ranking expert in log values and in manufacturing attainments, but through the probity and the four-square honesty of his business dealings he earned a reputation which tremendously assisted in establishing and maintaining many flattering sales connections. Mr. Snapp has recognized the soundness of Mr. Willey's business methods, and the asset involved in his reputation among his many old customers. Thus his and his associate's efforts have been directed to the task of providing that as far as it is humanly possible, Mr. Willey's ideals may continue to dominate every department of the business.

The reputation which Mr. Willey established stands undisturbed



THE MAN IN CHARGE OF THE BAND SAW MILL IS CONCEDED THE HIGHEST RANK AMONG EXPERTS IN THE ART OF OPENING UP VALUABLE TIMBERS. A BIG AFRICAN LOG ON THE CARRIAGE

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and unsullied. It is not only a flattering encomium to the late C. L. Willey, but as well to the management which is today perpetuating his methods that a great majority of the old customers remain on the books being served efficiently and with eminent satisfaction. Indeed, the records show that many such have never gone elsewhere for those commodities which the Willey plant can supply.

Any one who has been familiar with the Willey organization during the years of its development; he who has visualized C. L. Willey's name as one of outstanding luster in a large industry, could conceive no doubts that the business would endure the vicissitudes of the world war and the obstructive influences which followed. Viewing the present uninterrupted activity within the plant, the adequate and rapidly growing reserve of splendid logs, the over-flowing order books, and the impregnable financial standing of the institution, it is impossible to forego a feeling of pride that one knew Mr. Willey well, and was permitted to wit-

THE HUGE STEAMING VATS INDICATE THE SIZE OF THE WILLEY PRODUCTION. PRECIOUS WOOD WORTH A LARGE FORTUNE HAS BEEN PREPARED FOR CUTTING IN THESE GREAT TUBS

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ness a considerable part of the construction of this splendid business.

Largest High-Grade Veneer Plant

That description accurately pictures the present status of the C. L. Willey Company. It remains today the largest single manufacturing plant producing high-grade veneers. It is distinctly a Willey institution, literally as well as in spirit and practice. Ownership of the company rests today in the hands of Mrs. Charles B. Willey, widow of Charles B., who succeeded his father in the presidency of the company. Mrs. Willey's supervision has been successful, her effort being directed not towards active participation in the management, but towards the creation of an executive organization capable of running the business in a financially successful way and preserving the traditions and the reputation which were responsible for its development. That Mrs. Willey has accomplished her aim speaks infinitely more for her business

THE SMALL (60-INCH,) ROTARY MACHINE CUTTING POPLAR CROSS-BANDING. THE CHOICEST, SOFT TEXTURED YELLOW POPLAR AND THE MOST EXACTING METHODS STAND BEHIND THIS PRODUCT

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ability than had she endeavored to take active management with more or less executive success.

The plant is operating on full time with its entire battery of slicers, rotary machines, veneer saws and band sawmill equipment. It is backed by a sales corps made up of picked men whose ability is proven and whose integrity and loyalty are unquestioned. Its affairs are administered by an organization which functions as smoothly and as efficiently as Mr. Willey's ideals command. In Mr. Snapp it is headed by a business man whose training and natural ability have enabled him within an astonishingly short period to revive and apply every ounce of the result-getting efficiency — the confidence-building probity which constituted Mr. Willey's formula for business life.

The result is that the C. L. Willey Company is not only maintained today at the highest pinnacle of achievement, but it is assured that such position will be preserved.

A FINELY FIGURED AMERICAN WALNUT LOG BEING TURNED ON THE 100-INCH ROTARY. THE THREE ROTARIES (125-INCH, 100-INCH, 60-INCH) ARE WORKING WITHOUT A LETUP

It is for the purpose of giving visual evidence of this fact that this picture story has been prepared. The officers of the C. L. Willey Company would like to have every customer and every prospective customer personally visit the plant; personally view for themselves the spirit of energy and loyalty which pervades its every department. They want them to discern the evidences of new life everywhere apparent and would like them to recognize from their own observations that the ranking position of the organization, which Mr. Willey perfected, has never been threatened, and that it is maintained today, and will be maintained in the future in that same prideful place to which Mr. Willey brought it. Obviously, though, it is impossible that such personal visits may be made by other than a small number of clients. Thus this picturization has been arranged for in order that the plant might, in effect, be taken to the individuals.

THE 12-FOOT SLICER IS CUTTING ON A SPLENDIDLY FIGURED FLITCH WHICH EVEN BEFORE BEING PUT ON THE MACHINE WAS SELECTED AS SUITED TO THE NEEDS OF ONE OF OUR OLD CUSTOMERS

Present Personnel Maintains Willey Traditions

If the reader will, for a moment, imagine himself to be physically present at a tour of inspection of the Willey plant, he may gain a better conception of the effective activity apparent to the most casual observer, which today characterizes the big mill out on South Robey Street. In the first place one is necessarily impressed by one's first glimpse of the factory. It is, quite apparently, no mere veneer mill, but an imposing manufacturing institution with three-storey buildings occupying the equivalent of a full city block, log yards, sheds, lumber yards and other areas covering several acres of very valuable ground.

Such visitor would, naturally, repair first to the office, and it might reasonably be expected that he would first meet the head of the institution, Charles A. Snapp, president and general manager. He would find Mr. Snapp a man of pleasing, forceful personality, an executive with a record of eminent success; a man fitted by temperament, ability and experience to give to the Willey organization

PANORAMIC VIEW OF THE LARGEST VENEER PLANT IN THE WORLD. THE PRODUCT OF THIS FACTORY IS MADE FROM LOGS GATHERED FROM THE FOUR CORNERS OF THE GLOBE AND IS DISTRIBUTED WHEREVER CABINET WOODS ARE A RAW MATERIAL. PROBABLY NO OTHER NAME

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the same successful business administration which has characterized his important activities in other circles.

Mrs. Willey and the court which had jurisdiction in the settlement of the Willey estate were impelled to the effort to secure Mr. Snapp's services by their personal knowledge of his record as an executive, and his success in his own business. Mr. Snapp's conception of his work has not been that he should confine himself to administrative duties alone, remaining aloof from the detail which might easily be handled by the exceptionally efficient and experienced organization with which he is surrounded. He has applied his ability to understand and absorb business details in a way which has already given him a thorough personal grasp of the manufacture and sale of veneers.

Mr. Snapp is concentrating with especial care on the policy of surrounding himself with the most experienced and capable men ob-

HAS SUCH FAR-REACHING SIGNIFICANCE IN VENEER CIRCLES AS THAT OF C. L. WILLEY. THE TRADITIONS WHICH HE EVOLVED ARE EFFECTIVE TODAY. THE BUSINESS HE FOUNDED WILL REMAIN THE DOMINANT FACTOR IN VENEER MANUFACTURE FOR MANY YEARS TO COME

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tainable. The latest announcement in that particular was issued May 21, on which date Julius T. Spicker associated himself with the organization in the capacity of vice-president. Mr. Spicker, who is really too well-known both throughout this country and abroad to need detailed introduction, brings to The Willey Company a name of first rank in mahogany, walnut and hardwood Lumber circles. He is a recognized authority on mahogany and walnut logs and the manufacture and sale of the product thereof. In addition he has an ample experience in the hardwood lumber business.

Hector Robertson, assistant general manager and sales manager, started with W. L. Marshall of New York in 1906, going with the late C. L. Willey in 1909 in charge of the New York office. In 1911

FOUR VENEER SAWS WHICH HAVE MADE HISTORY. WALNUT, MAHOGANY, ENGLISH OAK, AMERICAN WHITE OAK, HAVE GONE FROM THESE SAWS TO THE WORLD'S MARKETS

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he was transferred to the Chicago office staying in the sales end here until 1915, after which followed a period of seven years sales representation for other large walnut interests, principally in the Michigan and Canadian territories. He served in former days through the various steps of the cabinet arts in Toronto, where he absorbed a thorough knowledge of veneers from the consuming standpoint.

One is soon aware of the loyalty to the organization and to the present management, which is evident in all departments in the big plant. Inquiry discloses the surprising fact that every operating head in the business, in the office, the various divisions of the veneer mill, the sawmill, the yard, the logging corps, has been with the organization from twenty-five to thirty-five years. The C. L. Willey Company boasts in many of its departments, of executives who are frankly conceded in the industry to be at the very head of their respective fields of activity. The Willey plant has always been considered a graduate school in veneer produc-

THE 16-FOOT AND THE 12-FOOT SLICERS DURING A BUSY DAY. THE PRODUCT OF THESE TWO FAMOUS MACHINES HAS COVERED A LARGE SHARE OF AMERICAN CABINET WORK

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tion. In that sense it has attracted experienced men who made it a point of pride to say that they were working at "Willey's."

One learns, too, in the office many things which give a clear conception of what the present management has accomplished, and which eliminate any latent doubt as to the future. For instance, one finds an average record of a full car of veneers shipped out every two days. The production record, with the unprecedented volume of business on the books, leads to the conservative conclusion that 1923 will considerably surpass the normal plant output and will quite likely develop a total cut of 35,000,000 feet of exceptionally high-grade veneers.

As Mr. Snapp states, and the records prove, this year will, without the interjection of some calamitous, world-wide upheaval, turn out to be one of the two or three biggest years in the history of the business.

THE AFRICAN FLITCH SHOWN ON THE 16-FOOT SLICER WAS PICKED OUT FROM SEVERAL DAYS' RUN OF THE SAWMILL FOR AN ACCOUNT THAT HAS BEEN ON THE BOOKS FOR THIRTY YEARS

Log Supply and Mill Equipment

The first subject of observation outside of the office would be the log yard which point is particularly interesting at the moment because, in addition to a splendid general assortment of walnut and mahogany, it contains a new shipment of African mahogany received two or three weeks ago, which, totalling some 500,000 feet, was received in a solid trainload of forty-five cars. One is impressed, not only with the adequate quantity, but with the exceptional quality of logs on hand. Yet, this is not at all surprising, for the log department is in charge of men who handled it for many years under C. L. Willey, and who are alive to every opportunity for securing raw material suitable for the high-grade veneer products for which this famous plant is noted.

Mr. Snapp asserts that no effort is neglected to maintain the long standing reputation for manufacturing and offering the largest selection of exceptionally figured and notably high-grade wood

THE VENEER CLIPPER IS ONLY A WASTE PRODUCER IF WRONGLY HANDLED. IN THE HANDS OF WILLEY ARTISANS IT IS ONE OF THE REASONS FOR UNVARYING SATISFACTION

available anywhere in the country. The product today is running principally to walnut and mahogany, with walnut considerably in the lead. In addition there is a large production of sawed oak veneers and rotary cut poplar. Also, as an accommodation to the trade, the Willey plant will continue to cut and handle all of the foreign, precious woods, as under C. L. Willey's regime.

One goes first from the log yard into the sawmill, which is equipped with an eight-foot band mill,capable of operating as efficiently and rapidly as the average hardwood manufacturing unit of the same proportions. It is, though, used in a different way than the usual type of hardwood sawmill cutting only on ordinary domestic woods, being used both to make lumber and to open and flitch logs for the veneer plant.

Mr. Snapp announces in this connection that he is now installing an accessory six-foot band mill, which will be used for cutting small logs in order to, somewhat, relieve the larger mill for the

FRONT END OF THE NEW PROCTOR DRYER WHICH WITH THE REBUILT INDIANAPOLIS MACHINE GIVES A DRYING CAPACITY OF OVER 125,000 FEET OF FINE VENEERS A DAY—EVERY DAY

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more important work. The lumber yard shows a splendid assortment of high-grade lumber, principally in walnut and mahogany, which is offered to the trade in excellent quality, thoroughly and efficiently cured and kiln dried.

Well-sustained Efficiency

An analysis of the Willey plant equipment leads to the revelation that since the original construction plans were finally consummated, there has been practically no change in the machines and accessories then installed. In short, the equipment which Mr. Willey provided is still functioning just as efficiently, with just as satisfying results in volume and quality as ever. On first thought one might think this an indication of lack of progress, a mark of stagnation. A most careful investigation, though, based on a comparison of records and on the utterances of the old department heads, reveals that this absence of radical changes in equipment or arrangement is but another mark of Mr. Willey's genius. He planned and built his mill so closely in accordance with the ideal

THE OTHER END OF THE "PROCTOR." THIS IS THE LATEST MODEL OF THIS ADMITTEDLY SUPERIOR MACHINE. ITS INSTALLATION IS BUT ONE OF MANY EVIDENCES OF COMPLETE EQUIPMENT

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arrangement; he so carefully selected his equipment that there resulted on the one hand the most delicate precision of balance in the operating function and on the other, a genuine elasticity which has made it possible to conform the operation to changing conditions and requirements without in any sense disturbing the smooth-flowing production.

So it has been necessary only to adopt such new mechanical features as have proven effective in the progress of the veneer art. There has been installed a thoroughly modern Proctor dryer, which is now in daily operation. The former mechanical dryer, a large machine of the Indianapolis type, has been entirely rebuilt and is now functioning on certain of the products, giving, with the new machine, a drying capacity of over 125,000 feet a day.

Plans are being rapidly completed for the erection of a large new power-house, which containing three strictly modern and up-to-

WALNUT WAREHOUSE No. 1 HERE THE CUT VENEERS ARE STORED IN A RESERVE SUPPLY DESIGNED TO GIVE A CONSTANT SELECTION THAT WILL MEET ANY TASTE NO MATTER WHAT IT MAY BE

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the-minute boilers, will give 900 horsepower capacity. This new building will be 70 x 90 feet in dimensions, will be equipped with a veneer hog for shredding veneer waste to be consumed under the boilers which will burn both coal and refuse. Every detail of this power plant will be modern in design and equipment. The most recent announcement relative to equipment changes states that work is now being started on the electrification of the entire plant. All the slicers, rotary machines and saws will be equipped with individual motors, thus keeping step with the very latest development and considerably in advance of most installations. The plant is equipped, as it has been since Mr. Willey's demise, with three rotary machines, respectively, 125 inches, 100 inches and 60 inches; two modern Capitol slicers, one with a 16-foot and the other with a 12-foot knife, and four modern type veneer saws.

WAREHOUSE No. 2 HAS PROBABLY BEEN VISITED BY MORE BIG VENEER BUYERS THAN ANY OTHER ONE SPOT. IT CONTAINS AN UNUSUAL SELECTION OF WALNUT AND MAHOGANY

The Selling Staff

And now it were well to introduce to readers the men who will take the splendid Willey product to their factories as high-grade veneers and precious wood lumber.

Walter B. Van, the man responsible for smooth production in this splendidly equipped plant, is qualified from every standpoint to carry off, with every honor, the task set before him. Mr. Van, is superintendent. For eight years he has been associated with the Willey Company, both in charge of operations and on the road. Before that he had some eighteen years' experience as a mill executive in the Williamson Veneer Company plant at Baltimore, Md., and thus combines in his training everything there is to know about the woods he cuts and how to cut them. In addition he has a qualification unusual for a mill man. Through personal contact he is thoroughly acquainted with the buying trades. Mr. Snapp has builded well in the sales department. His outside staff

THE IMMENSE CRATING ROOM IS LOCATED SO THAT THERE SHALL BE NO DELAY IN FORWARDING ORDERS AND NO CARELESS PACKING. SHIPMENTS ARE FOLLOWED THROUGH TO YOUR SIDING

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includes five men whose record is unusually impressive; men, who have not been salesmen alone, but who are equipped, through thorough schooling in veneers, to know not merely their product, but as well the varied needs of the customers they serve.

S. C. Erie, recently joined the Willey organization, having served in an important capacity in the veneer business for the past ten or twelve years. Among the more prominent of his former connections were the Veneer Manufacturers Company and the Litton Veneer Company. Mr. Erie will cover Ohio, Indiana, Wisconsin and Minnesota.

Jonathan Smith is an old Willey product. As well as having a very thorough manufacturing and road training elsewhere he served as band sawyer for the late C. L. Willey for four years, after which he was superintendent for the Litton Veneer Company of Rockford, Ill. He spent several years in the plant of the

THE BEAUTIES OF AMERICAN WALNUT, MAHOGANY AND OTHER PRECIOUS SPECIES ARE REVEALED IN FULL GLORY ON THE SAMPLE FLOOR, A SPOT DEAR TO THE HEART OF THE LATE C. L. WILLEY

Astoria Veneer Mills of Long Island City. Mr. Smith will cover Rockford exclusively.

Carl Hipelius, who has charge of the Chicago territory, has an unusual experience, qualifying him to adequately represent the Willey product to the consumer. For fourteen years he was in charge of the veneer department of the Pullman Company and, in addition has been with the Willey Company for the past four years.

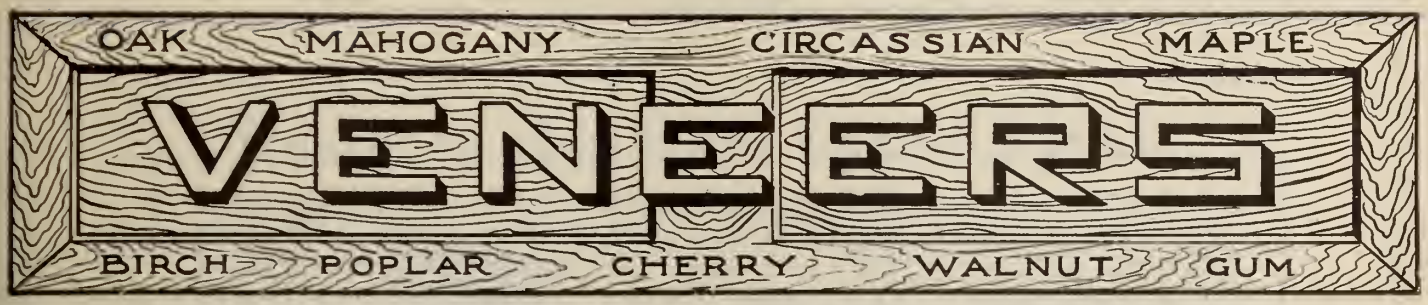
Earl Van, one of the later members of the Willey organization also had his principal training in the consuming field. He served for years as head of the veneer department of the Marvel Furniture Company, after which he spent some time with George W. Hartzell, going from there to the Willey organization. Earl Van will make his headquarters in Jamestown, covering northern Pennsylvania and western New York state.

THERE IS NOT A LOST MOTION IN HANDLING THE THOUSANDS AND THOUSANDS OF FEET OF VENEERS THAT MONTHLY TRAVEL FROM THE LOG PILE TO THE SHIPPING PLATFORM

Organization with Wide-spread Territory

In connection with outside sales, the Willey Company will maintain regular offices at Grand Rapids, Mich., Jamestown, N.Y., and Rockford, Ill. The home office staff will continue in charge of George Tamm, office manager, sixteen years with the company and one of the best schooled and most appreciated members of the organization.

The door of the big factory at 2558 South Robey Street is always open. Mr. Snapp, and his associates value nothing so much as the opportunity of demonstrating to interested visitors that the prestige and the accomplishment of the house of Willey, as created by the late C. L. Willey, carried on and fostered by his son, Charles B., will continue to develop in every way consistent with Mr. Willey's ideals and with the precepts of sound, efficient business practice.



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Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

VENEER MANUFACTURERS COMPANY

VENEERS

ROTARY CUT	Ash Birch Gum (Unselected) Gum (Selected Red) Bird's Eye Maple Red Oak White Oak Yellow Pine Yellow Poplar Walnut
SLICED SAWN	Mahogany (African) Mahogany (Mexican) Walnut Crotches Walnut Butts Walnut Longwood Oak (Quartered Red) Oak (Quartered White)

In all standard thicknesses

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Quality Veneers

in

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MAHOGANY
LONG WALNUT
BURLS · OAK · POP-
LAR & OTHER WOODS

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VIEWS OF OUR PLANT No. 11. H.G.W. Del.

Ready to ship from Grand Rapids

1/20", 1/8", 3/16" Yellow Poplar

A Size for Every Purpose

WALTER CLARK VENEER COMPANY

GRAND RAPIDS, MICH.

Why You Should Buy HAY Panels

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PANELS

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or
MADE TO ORDER

DOMESTIC
and
FOREIGN
Woods

BECAUSE They are made in Canada

" They are made by skilled workmen.

" They are made from the best of raw materials.

" They are made in a modern well equipped plant.

" The prices are reasonable.

HAY AND COMPANY LIMITED

WOODSTOCK, ONT.

Making Plywood Fire Retardant

How Veneered Doors, Panels, etc. May Be Made Fire Resistant—Specially Applicable when Fire Retardant Construction is Desired—Layers of Asbestos Laid under Face Veneer

By P. C. Bardin

What are classed as the elements, when aroused, have always been the implacable foes of mankind. Fire, wind and water are the most prominent, and of these three the wind and water are the least controllable, and the least preventable; obviously we must suppose that fire is both controllable and preventable, and yet the statistics show a far greater loss both in property damage and loss of business through fire than either of the other two. That is only a natural condition because most of the materials man builds with are inflammable. Of course, by building with concrete and steel throughout we can obtain what is termed a fireproof building, but such a building is not practical nor desirable for all purposes. For instance, one would not want a home built entirely of concrete and steel, nor would an office building or department store be very attractive without the use of some wood either for practical purposes or as an adornment. There is a certain warmth contained in wood, both to the touch and in appearance, that cannot be obtained in stone, concrete, iron or steel, no matter how artistically designed, nor finely wrought.

The ideal state would be to process wood in some manner to render it fireproof. Thus far we have not succeeded in accomplishing this feat in the literal sense of the word. It is not impossible; great strides have been made in this direction and the two most important methods are widely different in the means employed to gain the common end. One method is the draining of the pores of the wood and afterward forcing chemicals into the wood to the point of saturation, and through the means of the chemicals the wood becomes fire-retarding. The other method consists of applying asbestos to the core of the wood and covering this core with another layer of wood or a veneer, thereby concealing the asbestos and still causing the wood to be fire-retarding. This method is applicable to all of the millwork used in erecting a building, doors, sash, casing, base, etc.

Let us consider the door. The core is made up in the usual way and is covered with glue on two sides, after which asbestos paper is applied to both sides. It is then run through an indenting machine which punctures the entire surface (of both sides in one operation) through the paper and into the core. The purpose of the indentations is two-fold, first to permit the glue on the cross banding or face veneer to get into the core wood to make a binding joint, and second, to allow whatever gases that may be generated in the core due to excessive heat against the asbestos, to escape. The hardwood edges are protected in the same manner with asbestos paper, thereby covering the core on four sides with asbestos. The face veneers are then applied in the usual way. This is readily understood where the door is flush or sanitary, but in the event it is a panel door, the stiles and rails must be processed separately and also the panels before they are finally assembled. The method is the same except in door panels, the edges of which are not covered with asbestos, the use of metal angle strips being substituted. In a sash door the procedure is the same except that in the rabbeted edge where the glass rests a metal angle strip is inserted.

The sash are made up in the same manner, applying asbestos paper to the top, bottom and side rails and using the metal angle strips in the rabbeted edges. Wire glass is recommened to aid in retarding the fire.

Casing and base, and in fact all of the wider moldings, are made up on the core principle, the core being covered on four sides with asbestos paper and the molding shell glued to this core.

The main idea in all of this is to retard fire or to confine the fire to one room or section of the building. In a building constructed with wood processed in this manner, if a fire starts in one room the doors can be closed and the fire confined for a considerable length of time to that one room, for the fire must burn off the outer shell or the veneer before it reaches the asbestos, and while the core may become charred to a certain extent, due to the heat developed on the asbestos covering, it would have to be a veritable furnace before the veneer on the other side of the door would be ignited. Likewise the casing, base and the sash all tend to keep the fire back, and if wire glass is used in the sash the air is not permitted to rush in through broken or melted window lights, and this above all else helps to keep the fire down..

In experimenting with this method it was found that a section of a door 12x12-in.x1¾-in. thick, the core of which had been covered with asbestos paper, when placed in contact with a gasoline blow torch for thirty minutes, the core was charred approximately ½-in. below the surface of the asbestos. This will give a fair idea as to the length of time required for the fire to burn entirely through and attack the veneer on the other side.

The openings in a room or a building are the contributory causes for the spread of fire and if these openings can be constructed of processed wood that will confine the fire, we have approached the fireproof building. Unless the contents of the room or section of the building are intensely combustible, fire seldom spreads through the walls. Thus we see that we have advanced, but we are still in the experimental stage. Both of these methods are duly protected by patents and it is my belief that they are most important and the most successful of all the present methods of manufacturing fireproof wood.—Veneers, Indianapolis.

Sometimes it takes a lazy man to find room for improvement. Naturally his inclination is to get out of work so far as possible. This desire on his part, causes him to see the need of some mechanical means for lightening his labor.

COMMENTS OF A NEW CUSTOMER

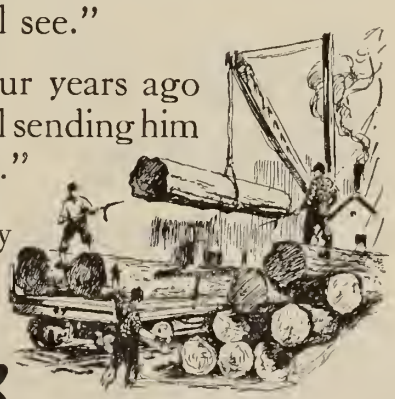
"Say, Mister Man," observed one of our new customers, "you've completely spoiled my organization. Up to the time you arrived on the scene the boys out in the factory considered that veneer was veneer, but now they've got the idea that nothing will do but Wood-Mosaic.

"Fact is I didn't know myself that there could be such a difference—and I've been at it for twenty years. But say," he asked with a dubious squint, "can you keep up the grade or is this bait for a new customer?"

We answered (A) yes; (B) no and assured him that, although patterns naturally vary, he would get the same uniformly high quality of veneers as long as we sold him and that he would also find that the best veneers are the most economical in the end.

"Well," he said with resignation, "I guess you'd better send me another car and we'll see."

That was four years ago and we're still sending him "another car."



Wood-Mosaic Company, *Incorporated*, Louisville, Kentucky

WOOD-MOSAIC
LUMBER & VENEER

Practical Questions on Cabinet Making

Can You Define Paterae; Thurming; Cockbead; Dentils and Plinth?—Thorough Insight Into All Phases of This Calling—Scope of Work Covered by Students

Each year the Department of Technology of the City and Guilds of London Institute, London, England hold a series of examinations on cabinet making. These are open to students in all sections of the country. The thoroughness with which this subject is covered and scope of the work of the two senior grades may be gathered from the following list of subjects.

Grade One

1. The nature and properties of the various kinds of wood used in cabinet-making, with the ports or places from which they are obtained.
2. The most suitable woods for construction. Groundwork and veneers; the best methods of seasoning and preparing for their various uses.
3. Cabinet-making tools; their different uses. The economy and advantage of wood-working machinery.
4. Plain jointing, cooper joints, dowelling, tongueing, dove-tailing.
5. Plane and solid geometry as applied to cabinet-making. The preparation of plans, elevation and section from small scale drawings.
6. The descriptions and names of different parts of pieces of furniture, such as pilaster, capital, frieze, plinth, base, surbase, etc.; also of mouldings. Freehand lines for brackets and mouldings. Modes of building circular rims; curved panels.
7. Veneering on flat and shaped work. Various appliances for veneering. Preparation of grounds and veneers, and the best methods of making work stand after veneering.
8. Cabinet brasswork, hinges, joint stays, bolts, and locks. The best methods of fixing, and their different advantages.

Final Grade

1. Principles and proportions in designing furniture with regard to its use and the material employed. The making of cutting lists.
2. Mechanical actions such as are used in cylinder fall desks, writing tables, dumb waiters, etc.; the different methods of expanding dining tables.
3. Inlaying and veneering with tortoiseshell, ivory, mother-of-pearl, and metals. The preparation and best methods of applying veneers to flat and sweep work.
4. The different styles of furniture and the periods to which they belong.
5. The principles of estimating the cost of labour and materials.

The questions set for the examinations held last May can hardly be considered academic or elementary. To answer them requires a complete mastery of practically all phases of cabinet making, including construction details, furniture design, qualities of various woods and other phases as listed above. In addition the students are required to submit examples of both work and drawings that have been completed by them. Many of these questions could not be answered in other than the most general way by many of the cabinet makers at work in our woodworking plants. Some may ask what's the use of knowing all these details. There is certainly a lot of satisfaction to be derived from a thorough mastery of one's chosen trade.

The questions given last May are as follows:

Grade One

1. Name five gauges and describe their use. (40 marks).
2. What special precautions would you take and what methods of construction would you follow in making furniture for a tropical climate? What are the best woods for the purpose? (35).
3. What is a saw set? Describe fully its uses and the purpose of setting saw. (35).
4. Give the average height, width, and depth of sideboards, hall tables, washstands, and dining room chair. (35).
5. Make a drawing of a four feet pedestal writing table with nine drawers. Scale 1½ in.—12 ins. Draw the top and plinth mouldings full size. (40).
6. Explain the meaning of the following terms:—Housing, paterae, architrave, templet, wainscot, entasis, frieze, thurming. (40).
7. What brass work would you require to fit up a brass wardrobe with three doors, and two drawers under? State the various sizes. (40).
8. What is a mason's mitre? Describe and illustrate your answer. (35).
9. State briefly what you know of the following:—Ash, beech, walnut, mahogany. (40).
10. Draw a plan of an octagonal table three feet across to 1 in. scale; and also a nonagon (full size), each side of which is to be ¾ in. long. (35).

Final Examination

1. Draw three different hinges or supports for a secretaire flap; state which is the most efficient, and why.
2. Describe fully the different varieties of mahogany and satinwood. When were these woods first introduced into England, and by whom?
3. Make a drawing of a card table on late eighteenth century lines which is 3 ft. square when open and 3 ft. by 18 in. when closed. Show the method of finding the centre for pivot.
4. Draw typical Queen Anne, Chippendale and Sheraton cornice mouldings suitable for a bookcase 6 ft. long and 7 ft. high; also illustrate the correct type of base for each of these styles.
5. Describe fully the various influences on Chippendale's designs and draw typical examples.
6. Make a sketch of a piece of furniture embodying the following parts, which should be indicated:—Surbase, astragal, plinth, bed-moulding, abacus, cockbead, pilaster frieze and dentils.

C. L. WILLEY COMPANY

The **Largest Veneer Plant** *in the* **World**

LET Fact Lend Color to Our Claim" that your good taste and judgment concerning veneer can best be satisfied in consultation with the staff of the WILLEY plant. We invite your inspection of samples, and assure you of our personal interest in your requirements.

Veneer and Lumber

Walnut
American and Circassian
Mahogany
Quartered Oak
Satinwood
Vermilion
Teak
Rosewood

And Many Other Foreign and Domestic Woods

(1962)

Nature's Palette

AUTUMN woods glow with color like a painter's palette. All too soon the glory fades, leaving snow lying where gay leaves flaunted their red and gold. Yet there remains a place where you can find the richest colors of the forest in enduring form, ready to adorn and dignify the work of human hands.

The WILLEY plant can show you veneers which Nature has dyed with a wealth of color—mahogany and vermilion, rose and russet, ochre and deep satisfying brown. These and many other tints and shades are all mellowed by the dignity of age, for in terms of forest-history nothing made of wood can ever be crudely new. The blendings of light and shadow wrought into the color-scheme of a masterpiece of veneer are the delight of connoisseurs and the despair of artists.

As the hand of Nature has been lavish in spreading rare hues on these palettes of her forest studio, so the WILLEY plant offers a lavish abundance of veneers among which you can make discriminating choice.

C. L. WILLEY COMPANY

2558 South Robey Street CHICAGO

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Lubrication of Woodworking Machinery

Repair Bill May Be Reduced by Closer Attention to Machine Operation—Grade of Oil Should Suit Work and Equipment—How to Break in New Machine

By M. D. Baldwin*

In discussing the correct lubrication of woodworking machines, the writer has in mind primarily the matter of high speed spindles such as carry the cutter heads on jointers, surfacers, and moulders, circular and band saws, etc. In general, bearings may be divided into two classes or types; first, those applying sliding motion; second, those applying rolling sliding motion. The former type bearing is the more common. It is the older established and has the weight of precedent and tradition behind it. It employs the so-called anti-friction metals, bronzes, babbitts and the like, and depends upon a thin film of oil between the bearing metal and the journal to keep friction at the minimum. The latter type is the more modern development and finds its expression in ball bearings of various designs and in roller bearings—both cylindrical and tapered or in combination of both types. In the case of mechanical types of bearing, steel balls or rollers with a free rolling motion on hardened and ground steel races are employed.

In the case of anti-friction metal-babbitts, usually with a high percentage tin base or the various bronze metals—the lubricant, in theory at least, must prevent any actual contact between the journal and its bearing. Speeds as high as 7,000 and 8,000 or even 9,000 r.p.m. for cutting heads are successfully employed by production engineers with either type of bearing.

Speed is an Influencing Factor

At low speed lubrication troubles seldom occur for the reason that the heating from excessive friction does not quickly manifest itself, but at the higher speeds if the lubrication breaks down heat is developed with extreme rapidity. A bearing may "freeze" from a cool start in a matter of a few minutes only, to the ruin of the journal or box.

Dirt (dust, shavings, etc.,) is the chief enemy of successful lubrication. The first law of the mill wright is "Clean oil in clean bearings." Too much oil won't hurt the bearings. (but is bad for the motor commutator), but may gum up the surrounding parts and be a dirt collector, and is an avoidable expense. The amount of oil required depends upon the size of journal, speed and load, as is also the quality of the oil used.

The trouble generally is that nobody makes lubrication his particular job with the result that the efficiency in this particular direction is low. The purchasing agent listens to the smooth salesman, and buys his oil by the oratory given instead of on an analysis or understanding. He buys oil rather than lubrication. With ball or roller bearings quite a diversity of opinion prevails as to the type of lubricant required—oil or grease. No diversity of opinion appears as to the quality. All manufacturers and users of ball or roller bearings unite in the necessity of non-alkaline, non-acid oils or greases. The balls and rollers must not be allowed to become rusty or pitted with acid.

It is simple enough to test a lubricant for these qualities. Simply polish a piece of steel—oil or grease with the lubricant to be tested—place it in direct sunlight for a few days. If deleterious qualities are present the steel will pit or rust, if not it will remain clear and polished.

Usually lubrication troubles occur shortly after the installation of a new machine, and the maker is often blamed for a condition utterly beyond his control. Superintendents and mill wrights often cover their own oversights and ignorance of proper installation, by claiming original defects of manufacturing. The proper method of starting up any new machine begins with the foundation. First, level the machine carefully and accurately. Second, clean all bearings and place oil or grease where required. Having done this, with great care turn over the moving parts by hand to be assured that no bolts or packing pieces or loose parts are in the way. Finding the way clear it is in order to carefully supply the power to the main heads or spindles, but without connecting the feed works up at all. Run the heads a couple of hours or so to get them "run in," as the factory term is—all the time watching the bearings closely for heating, and being very liberal with the oil. Many times at this point the bearings become pretty hot. This is not due to any inherent defects in the machine, but may be laid to the fact that no machine can be tested in one plant and shipped to another, and be set up in precisely the same manner and under the same conditions as in the manufacturer's testing room. This is the time to watch your bearings closely. They must not be allowed to over-heat. Before taking the bearings down for refitting, in case of heating, trouble can often be saved by shutting down the power and allowing bearings to cool. Then a new start with plenty of fresh oil brings the bearings around all right. The probable reason for this action of a bearing is that the pressure caused by the heating has reduced the high spots of the bearing without having the action continue long enough to score or injure the journal.

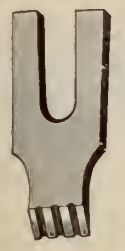
Now connect up the feeds and run a good and sufficient length of time to limber the bearings and all parts up—don't be afraid of spending plenty of time and oil the first day or two. Lastly, apply the load to the slowest speeds and feed and gradually work up to the rated capacity of the machine.

Any good automobile should never be driven over 25 miles per hour for the first 500 miles, some say 1,000. Automobile makers recommend a complete change of oil every 250 or 300 miles until the engine is run in. Apply the same common sense to your woodworking machines and your mechanical troubles will be greatly lessened.

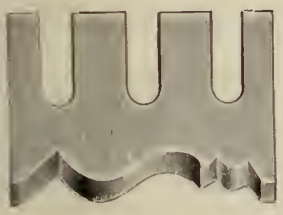
*Vice president Oliver Machinery Co.

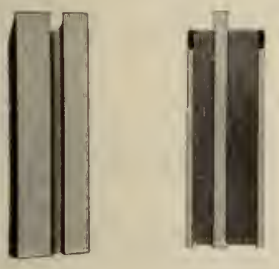
Special Seasoning Treatment

A French scientist has discovered that all kinds of wood can be seasoned rapidly and efficiently by means of ozone. He has established a factory in Paris, and another in Italy, where various species of wood are being treated by the new process. In two weeks it is claimed, freshly-cut timber is ready for the cabinetmaker, and as dry as if it had been exposed to the air for years.

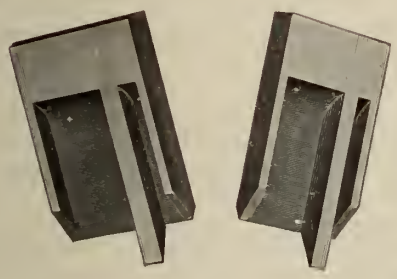


SIMONDS
Machine Knives



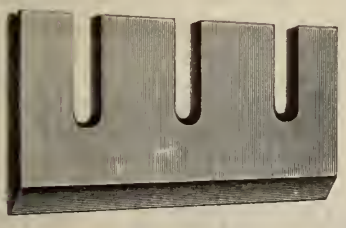


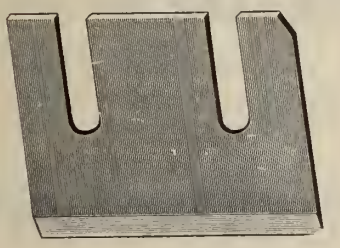
Woodworking shops, the machines of which are equipped with Simonds Knives are getting greater production and longer knife service. The high-grade steel of which Simonds Knives are made is tempered by a scientific method to hold its cutting edge longer and withstand wear.



Every kind of machine knife, as well as Saws which are required in the woodworking industry are produced in one of the five Simonds factories.

When you require knives send us your inquiries.



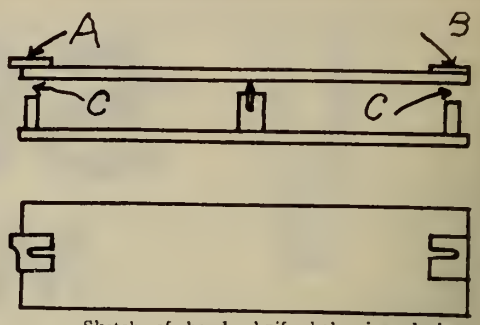


Simonds Canada Saw Co., Ltd.

Montreal, Quebec

ST. JOHN, N. B. **VANCOUVER, B. C.**

Relative humidity may be quickly ascertained with this Humidigraph



Sketch of handy knife balancing device

Humidigraph for Kiln Operators

An interesting and handy little device for quickly determining relative humidity from the wet and dry bulb readings has been prepared by the Standard Dry Kiln Company, Indianapolis, Ind., and is being offeerd, free, to plants operating dry kilns. With this device the relative humidity can be quickly ascertained, without any calculation or figuring, when once the dry bulb temperatures and the difference between the wet and dry bulb temperature are known. With this information it resolves itself in a matter of sliding a scale until the figure representing the difference shows in a special opening and then a direct reading is made.

A good idea of this device may be had from the accompanying illustration. Anyone interested in securing a Humidigraph can do so by writing the above-mentioned company.

Balancing Knives for the Moulder

By Traveller

Every sticker man of any account balances his knives before putting them on the heads. If this isn't done, good work cannot be expected, and, furthermore, the machine will be put out of commission in a very short time. At least it will be rendered incapable of doing good work.

There are knife balancers on the market that can be purchased from some of the machinery and supply houses, but it is possible to make one of a few pieces of wood that is hard to beat for accuracy. Such a balancer is illustrated in the sketch presented here. The balance is obtained by balancing a piece of board on a piece of metal grooved into a block of wood, the metal strip being bevelled to a fairly sharp edge.

The user of this balance soon becomes expert at measuring it with his eye, but for anyone not so sure of their judgment it is a simple matter to use a rule. If two knives are to be cutting one is to be placed on each end of the balance, both projecting over the end the amount they are to project when cutting. If one knife is to do the cutting, which is frequently the method adopted, the cutting knife is allowed to project while the balancing knife is kept flush with the end of the balancer, just as it will be kept flush with the head when set on the machine.

This gives the proper balance. If the knives are of equal weight when placed on the balancer according to the way they will be used no trouble will be experienced when they are put on the machine and the machine set in motion. When the knives are laid on the balancer in their proper positions the bolts to be used should be placed along with them as there is often a difference in the weight of bolts. It does not matter much just where the bolts are placed on the balancer so long as they are kept at the same distance from the ends. Often an extra bolt can be used to effect a balance when using a blank along with the cutting knife.

Too much attention cannot be paid to this matter of balance. If those in doubt will only examine such a simple thing as a sand disc and note the trouble taken by the builder, if it is a proper machinery manufacturer, to obtain a running balance, they will be assured of its importance. And when a knife balance can be so simply constructed there is no excuse for any mechanic being without one. This one illustrated here was seen in use by a sticker operator in Toronto. A is the cutting knife, projecting over the end the distance it will project from the head when cutting. B is the balance knife, and C.C are the distances measured to see if the balance is correct.

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"Watertown Slides" do not stick or bind when the table is extended. They work smoothly and easily and are a big selling point for yourself and the dealer. Let us show you how the "Watertown Slide" and the Watertown Automatic Roller Bearing Equalizer Table Slides can solve your problem.

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The Lumber Market

Imported Wood

There has been very little change in the American lumber market. In general there is a slight improvement in demand, coupled with a stiffening of values. As yet the furniture industry has not resumed buying to any considerable extent, although it is expected to be a real factor in the market within a very short time. It is conceded by many who are in close touch with the situation that the stocks of southern hardwoods are considerably lower than they were at the first of the year. This would seem to indicate that stocks are not any too plentiful for the supply on hand January 1st, 1923, was considerably below normal. Sap gum appears to be very scarce in both plain and quartered and as a result there has been an increase in quotations. This has been followed by a slight advance on certain grades of red gum. It is reported that the manufacturers of flooring have been doing considerable buying and as a result the values of red and white oak, No. 1 and No. 2, have stiffened slightly. The automobile manufacturing industry is still the outstanding factor in the field, while flooring manufacturers and sash and door men are showing considerable activity.

Buffalo, N. Y.—Things are quiet in the Buffalo market at the present writing as buyers of Buffalo lumber stocks are exhibiting an inclination to hold off, purchasing only for present requirements and that in small lots. This is due largely to a belief that lumber values may go still lower though this is not borne out by the trend of general market conditions. It is anticipated that fall business will be fairly good although the expectancy is that it will require considerably more selling to land the business.

Louisville, Ky.—Reports from this centre indicate a gratifying improvement during the last few weeks. At the present writing stocks are moving at a fairly satisfactory rate and the opinion of those in close touch with the situation is that the closing months of this year will witness a fair demand for lumber. The buying does not seem to be inclined to any one wood or grade, but is fairly evenly distributed over all hardwoods. Values are remaining more or less stationery, and are very firm at present levels. Production in the south has improved somewhat, although not sufficiently to be much of a factor in the fall market.

Memphis, Tenn.—Some further increase in the demand for lumber is needed in the Memphis market. Practically all the larger consuming groups are active with the exception of the furniture industry, though the latter is buying in increasing quantities. As was the case in other centres the manufacturers of automobiles and trucks are the heaviest purchasers. Manufacturers of flooring and the sash and door men are also important factors in the field. Stocks are low on the average, some items being on scarce side. Red gum is the only wood that is what might be called plentiful. Prices are firm with a slight upward trend in the case of special stocks.

Domestic Woods

There is a slight but noticeable improvement in the local lumber markets. According to information gathered from various sources, business in Ontario woods is picking up slowly, while there has been a fair demand for Quebec stock. The price situation does not show any marked changes, with quotations on most lines holding firm. In the hardwood arena it is found that the demand from American centres shows a decided improvement. Birch in all grades and thicknesses up to 10-4 being in strong demand. This wood is going largely to automobile manufacturers in Detroit and other centres. Very little maple is being offered and this wood is decidedly scarce. The same holds true with regard to basswood, although some large purchases were made recently. In the softwood field white pine in No. 1 and No. 2 mill culls is in strong demand. Available stocks of the lower grades are limited. It is thought that due to the Japanese disaster and the consequent demand for B. C. woods, the lumber products of the western province will not be a very big factor in the eastern market. This will tend to increase the demand for pine, spruce and other hardwoods. Judging from the wages being offered to woodsmen, production costs this winter will be considerably above those which prevailed last year. This will likely mean that the price asked for local woods next season will be in advance of the present market.

Sales Organization Dissolved

The subsidiary sales company of the Kirby Lumber Company, Houston, Texas has been dissolved. This was announced in a letter over the signature of the president John H. Kirby, as follows. "In order to facilitate the handling of our business, it has been decided to dissolve our subsidiary sales corporation, the Kirby-Bonner Lumber Company.

"In accordance with this decision and effective this date, the Kirby Lumber Company takes over all accounts and assets of its subsidiary and resumes the direct handling of its sales. The personnel, organization and policies of the Sales Department remain unchanged."

Watch the Planer Bed

When feeding narrow stock through a planer, the operator naturally runs it in the center of the machine. This practice should be discouraged, because if persisted in the table will become worn more in the center than at the sides. And when wide stock is planed, it will come through thicker in the center. While this may not be noticebale on single pieces, where wide cores on to which veneer is to be glued, are run, and a number of them are placed together in the press, the variation on them all will be sufficient to prevent the veneer from receiving proper pressure near the edges, and serious trouble may result. Further such a practice tends to dull the knives in the centre, necessitating grinding before the outer ends are dull. The result is that the knives are ground away unnecessarily fast and that more time is spent in grinding the knives than were the work to be evenly distributed over the bed.

Stock mouldings should be worked from a template. A piece can be taken from the machine for the next setting-up purposes; but the first piece run through should be compared with the template. In this way they will be kept uniform.

The Sidman Lumber Curing Process

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Either Wood, Brick or **Concrete** Building.

Fillers and glazes to preserve the building.

The TAG-ROESCH **Automatic** Time-Temperature and **Humidity Controller.**

Three-ply and Du-o-fold Army Duck Curtains, and Hussey Door Carrier Doors.

Automatic Heating, Ventilating and Humidity Systems for Varnish Rooms.

Reducing the Back Pressure Valves, Oil and Grease Extractors.

Sidmans AUTOMATIC **Suction System** for returning ALL Condensation DIRECT to the Boiler.

Cantilever Steam Traps and other Steam Specialties.

Active and Non-Down Draught Vent Heads for all purposes.

Cleanable Screen Panel and Window Ventilators.

Roller Bearing (Ott) **Channel Iron** Car Bunks and Transfer Cars.

Thermostats, Recording Gauges, and The Sidman Special Hygrometers.

For Description and prices, write

The

Sidmans of Canada

Heating and Ventilating Engineers and Lumber Curing Specialists

LONDON **ONTARIO**

THE SIDMAN LOCK Reg Trade Mark

"Well Bought is Half Sold"

SPECIAL MENTION WHITE PINE

For General Shop-work

5 cars 1 x 3 & up—8/16 Mill Run

In pink of condition
Contains nice percentage of Good.

Approx. Widths:

3″	4″	5″	6″	7″	8″	9″	10″	11″
2%	13	17	27	13	12	10	5	1

At same point we have 3″ White Pine in assorted widths.

Canadian General Lumber

Company Limited

FOREST PRODUCTS

TORONTO OFFICE:—
1005 Federal Building

Montreal Office:—514 Canada Cement Company Building

Mills: Byng Inlet, Ont.

News of the Trade

S. L. Begg, Crysler, Ont., has bought out the sash, door and lumber business of Jerry Page & Son.

Keenan Bros., Owen Sound, Ont., are putting in the foundations for a new warehouse to cost about $8,000.

Sydney French, of Palmerston, Ontario, has purchased the Hyndman Planing Mill, Guelph, Ontario.

Amos Maynard, carriage manufacturer, Woodbridge, Ontario, recently passed away.

Heintzman & Co., Limited, Toronto, recently installed 40 pianos in the Toronto Conservatory of Music.

Harry Krug, son of Wm. Krug, of Krug Bros. & Co., Chesley, Ontario, was married recently.

Fire recently destroyed part of the premises of the Sherwin-Williams Co. of Canada at Montreal.

Thomas Broom Co., manufacturers of brooms and mops, was recently registered at Montreal.

The Freezo Kitchen Cabinet Co., has been registered at Vancouver, B.C.

Victor Varin, sash, door and lumber manufacturer, has been registered at Montreal.

H. Kreiner & Company, Kitchener, Ont., have fitted up a new showroom in their factory and are making an attractive display of their line.

The Malcolm & Hill Company's furniture exhibit in the Made-in-Canada train which has been touring France has been receiving much favorable comment.

The Hatfield, Kyle, Limited, Juniper, N. B., was recently incorporated to carry on a general lumbering and woodworking business. Capital $99,000.

The Haileybury Lumber Co., Haileybury, Ont., has commenced the construction of a new planing mill on the site of the former Riordon rossing mill.

Enever-MacManus have completed the new sash and door factory they were erecting at Powassan, Ontario. This plant is being operated by electric power.

Miller-Gordon & Co., Carleton, N.S., recently shipped 2,350 boxes of clothes pins to Australia. The same firm also filled an order for 70,000 dowels for a firm in Dunedin, N.Z.

The will of the late Frank Stanley, Toronto, piano manufacturer, was recently probated. He left an estate valued at $129,885.

Ham Bros., Limited, Brantford, Ont., manufacturers of refrigerators and kitchen cabinets, are planning to erect a new lumber storage shed at a cost of $3,000.

Mov-Ezy Seating Company, of Canada, Limited, Montreal, is a new company recently formed to manufacture chairs and furniture. Capital $1,000,000.

A recent report from Newcastle, N.B., is to the effect that a furniture factory will be established there within the next few months. The names of those interested are not disclosed.

Goulston & Co., Limited, 1083 St. Clair Ave., W., Toronto, Ont., recently incorporated to take over the cabinet making business of Alfred Goulston & Co. Capital $40,000. A. Goulston is the manager.

The Seaman-Kent Co. Limited, Toronto, Ont., made a very interesting display of their flooring at the exhibition held in Ottawa recently. One of the outstanding features was a motion picture demonstration of the manufacture of hardwood from the forest to the finished product. This display came in for considerable favorable comment. This company has a local office in the Broad St. station.

The Emergency Auto Seat & Body Co., are contemplating the erection of a factory at Orangeville, Ont. The plant will occupy about 28,000 square feet and the work is in care of S. E. Taylor, 911 Bathurst St., Toronto.

The plant of the Canyon City Lumber Co., six miles east of Creston, B. C., which also includes a new box factory recently completed, was completely destroyed by fire lately. The loss is estimated at $40,000.

Anglo-Canadian Toy Manufacturing Limited, Toronto, is a new company recently organized to manufacture and deal in toys and all kinds of novelties made of wood. Capital $40,000.

E. W. Whittington, of the Moore Whittington Lumber Company has been elected director for British Columbia on the executive of the Western Planing Mill and Woodworking Association.

The R. Elder Carriage Works, Ltd., Phoebe and Soho Sts., Toronto, have commenced the erection of a new paint shop. The building will be one storey, 60 ft. x 80 ft., steel and brick construction.

The sash and door plant of M. P. Hogan & Sons, Charlottetown, P.E.I., was recently destroyed by fire. The loss is in the neighborhood of $10,000 with insurance amounting to $7,500.

A. Deslauriers, Limited, Quebec, P.Q., was recently incorporated to take over the business now being carried on by A. Deslauriers Reg'd, and to carry on a general woodworking and contracting business. Capital $49,000.

Thorp, Hambrock Co., Limited, Montreal, P.Q., who were recently incorporated with a capital of $250,000 to manufacture and deal in paints and varnishes, are erecting a plant at Hopper Ave., Montreal.

The plant of the Pirate Hockey Stick Company, Wolville, N.S., was recently destroyed by fire. The loss which includes plant and equipment, together with a stock of finished sticks, is partially covered by insurance.

The plant of the R. A. Smart Manufacturing Company, Elmwood, Man., was recently destroyed by fire. The damage is estimated at a quarter of a million dollars. This company manufactured a line of sheaf loaders.

According to the report on the Home Bank recently issued by curator A. B. Barker, the Arnprior Cabinet Co. Ltd., Arnprior, Ont., is indebted to the defunct bank to the extent of $120,000.

Emile Sevigny recently passed away at Three Rivers, P.Q., Mr. Sevigny was a resident of Barrie, Ontario, for many years, having located there 76 years ago. For 45 years he conducted the Barrie Carriage Works.

A report from one of the railroads indicates that shipments of furniture are gradually increasing. This is an indication that the regular fall improvement in business conditions is making itself felt.

Stephen Sheff, Bruce St., Glace Bay, N.S., whose upholstery shop was destroyed by fire two years ago, has opened a shop that is equipped with new and modern machinery.

S. B. Nichol has completed a planing mill at Blenheim, Ont., recently. The plant is two stories, 26″ x 50″, of steel and concrete construction and is equipped with modern machines, electrically driven.

The death of M. A. Potter, at Indianapolis, Ind., marks the passing of the last survivor of the original incorporators of E. C. Atkins & Co. Previously to the year 1885 the institution had been a partnership and at the time of incor-

If fire should visit your plant tonight

If fire should visit your plant tonight—would it be effectually smothered by an "Automatic" Sprinkler System the minute it started, or would it continue to gain headway until the firemen arrived, with a consequent loss running into the thousands?

We have some information on this subject that will interest you.

The Bennett & Wright Co.

Limited ——— Contractors

72 Queen Street East TORONTO

Western Ontario Branch

77-81 King Street London

Bond POWER TRANSMISSION

comprises

Hangers with Babbitt, Ball or Roller Bearings
Pillow Blocks
Flat Boxes
Mule Stands, Wall Boxes, Spiro Compression Couplings, Clamp Couplings.
Plate and Sleeve Couplings
Cast Iron Pulleys
Solid and Split Collars
in fact everything
for transmitting Power in Woodworking establishments.

also

Bond Ball Bearing Truck Casters.

For High Speed Machines use the Bond Ball Bearing Loose Pulley. Used extensively on High-Class Woodworking Machinery, it has given the utmost satisfaction.

Catalog 38 cw sent on request.

BOND ENGINEERING WORKS, Limited

Villiers and Munition Sts.
TORONTO

CHOOSING A SOURCE OF SUPPLY --

-- is not always an easy matter for the Lumber Buyer

YOU CAN DEPEND ON US --

-- our modern operation and experience insures you

QUALITY CO-OPERATION

Inquiries Solicited

PLAIN RED OAK
65,000 4/4 Fas
123,000 4/4 No. 1 Com.

PLAIN WHITE OAK
84,000 4/4 Fas
16,000 1/2 Fas
93,000 4/4 No. 1 Com.
34,000 1/2 No. 1 Com.

QTD. WHITE OAK
14,000 4/4 Fas
16,000 4/4 No. 1 Com.

PLAIN SAP GUM
23,000 5/8 Fas
32,000 5/8 No. 1 Com.
85,000 4/4 No. 1 Com.

PLAIN RED GUM
71,000 4/4 Fas
19,000 6/4 Fas
97,000 4/4 No. 1 Com.
83,000 6/4 No. 1 Com.

QTD. RED GUM
13,000 4/4 Fas
66,000 4/4 No. 1 Cam.

ELM
16,000 6/4 No. 2 Com.
18,000 6/4 No. 3 Com.

TUPELO GUM
32,000 4/4 Fas
30 000 4/4 No. 1 Com.

SOFT MAPLE
12,000 4/4 No. 2 & Btr.

KELLOGG LUMBER COMPANY INC.

FONDALE, LOUISIANA

poration the late Mr. Potter was elected treasurer. Later in 1911 he was elected secretary of the E. C. Atkins & Co., which post he held until his death.

The Warren Organ Co., Limited, Barrie, Ont., was recently incorporated with a provincial charter to take over the patent, good will, and contracts of Warren & Son of Woodstock, Ont., and to manufacture and deal in pipe organs and other musical instruments.

The new mill of James T. Gilchrist, Gladstone Ave., Toronto, was recently completed. The old plant was destroyed by fire about eight months ago.

The Frontenac Lumber Co., at Ardoch, Ont., recently suffered a loss by fire.

The Maritime Woodwork Products Limited, Woodstock, N.B., was recently incorporated to take over the business of S. C. Heckbert, Woodstock, and to manufacture and deal in wood products of all kinds. Capital $20,000. S. C. Heckbert and S. B. Heckbert are two of the incorporators.

Taylor & Loree, manufacturers of automobile tops, W. G. Taylor, 911 Bathurst St., Toronto, being one of the partners, are planning to erect a new factory at Orangeville, Ont., at a cost of $50,000. The new plant will be one storey, 90 x 280 feet in dimension and of brick and mill construction.

The Davie Shipbuilding & Repairing Co., Limited, Lauzon, P. Q., have awarded a contract for the erection of a joiners shop at a cost of $15,000. The building will be one storey, 80 by 80 feet, of concrete and brick construction They are in the market for the necessary equipment.

H. Krug, of H. Krug Co., Kitchener, Ont., upon returning from a Western trip, reports that the country is in fine condition and everyone is optimistic. He spent a few days at his ranch south of Calgary, and stopped at Winnipeg and other points.

The Eburne Sash, Door & Lumber Co., Eburne, B.C., have recently organized to take over the business known as the Eburne Sash & Door Company. The new organization is under the management of V. J. Winkel and W. C. Winkel. A branch is being established in Hastings Townsite, B.C.

C. B. Manufacturing Co., Limited, Hull, P.Q., was recently organized with a federal charter to manufacture and deal in timber and lumber. Capital $100,000. Among the incorporators are C. B. and B. Moses, manufacturers, Ottawa, J. H. Isbister, Britannia, Ont., and H. W. Nesbitt, manufacturer, Winchester, Ont.

John A. Bain, founder of the Bain Wagon Company, Limited, Woodstock, Ont., and who has been directing the affairs of this organization for 43 years, has retired from active management of the company. E. B. TerryBerry, formerly secretary-treasurer, has been appointed general manager.

Henry Arnold, of the Wunder Furniture Co., Limited, Kitchener, Ont., a well known furniture man of that town, passed away recently in his 67th year. Mr. Arnold assisted in forming the company about eighteen years ago, and has been an active member since that time, having been foreman of the cabinet making department.

At a meeting of the shareholders of the New Hamburg Furniture Company, Limited, New Hamburg,, Ontario, which was incorporated recently to take over the business of the Schierholtz Furniture Company, the following were elected as the Board of Directors. F. Debus, president; W. L. Seyler, secretary-treasurer and manager; Thomas Wenzel, B. C. Wenzel and R. C. Luckhardt, directors. Additional stock has been subscribed and the company's capital increased $100,000.

The S. Hadley Lumber Co., of Chatham, Ont., with which is affiliated the Chatham Sand & Gravel Co., will continue business and pursue the same policy as has characterized the organization since 1846. It will be remembered that W. A. Hadley, president of the company, passed away recently. The new general manager is Charles S. Hadley, son of the late president, who has been associated with the business for some years. M. R. Bogart will continue as secretary-treasurer of the company.

A fire loss of from $250,000 to $300,000 was sustained recently by P. W. Gardener & Sons, Galt, Ont. The blaze started in a garage adjoining their property and spread rapidly through their lumber piles. A large warehouse containing many thousand doors and windows was completely destroyed, but by concentrating their efforts the firemen succeeded in saving the plant. Re-construction work will commence just as soon as the debris can be cleared away.

Contracts totalling approximately $5,000,000 were recently awarded the Matthews Brothers Company of Milwaukee for interior woodwork for the $15,000,000 Straus Bldg. now being erected at Chicago. The interior of this imposing structure is to be finished throughout in walnut. Another interesting feature is that the floors of this thirty-two story building are to be of 2 in. maple instead of concrete or tile as is often used in buildings of this type.

Lionel Rubin of London, Eng., recently passed through Toronto on his return from a tour of the furniture manufacturing centres of Canada and the United States. Mr. Rubin represents Morris, Rubin & Co., furniture manufacturers of London, Eng., with the agents in South Africa, India, United States and Australia. It is likely that a permanent Canadian agent will be appointed upon Mr. Rubin's return. This company manufacture exclusively for such houses as Maples & Co., Warring & Gillow, Harrod's, and other well-known British houses.

In connection with the new American Furniture Mart which is being erected in Chicago a furniture organization to be known as American Furniture Securities Corporation is being organized to handle stock and bond issues of new combination and expansions in the furniture field. It is seldom that furniture manufacturers appeal for public investments whereas the railway and steel companies, automobile manufacturers and other branches of industry take full advantage of public willingness to invest. This new organization will specialize exclusively in furniture issues and will enable the furniture manufacturing organizations to draw on public funds for needed financing and expansion.

The by-laws recently submitted to the ratepayers of Listowell, Ontario, guaranteeing the bonds of the Blackmore-Hamilton Furniture Co., Limited, to the extent of $15,000 was carried by a large majority. This company has been in existence for about a year and has succeeded in securing a nice volume of business. At the present time they are employing 40 hands and expect to increase this from time to time. Since acquiring their present plant they have installed a Preston ball bearing planer and a Preston dovetailing machine, also a DeVilbiss spray machine. At the present time they are specializing in dining-room and breakfast-room furniture as well as making a line of decorated children's chairs.

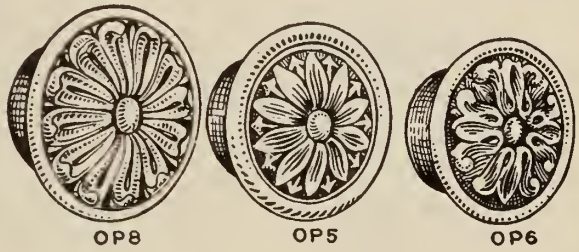
When there is a difference of more than 1/8 in. between a spindle hole in a large saw and the spindle, it should be bushed to obtain a proper running balance.

Succumb to luxuries and you may succumb to temptations in order to gratify them. Endure hardship, rather.

MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

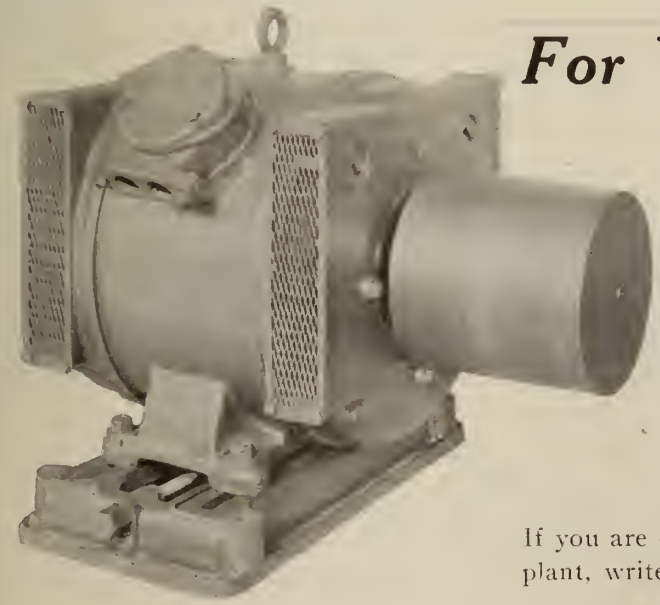
ROSETTES A new Period item to accompany the knobs.



Waddell Manufacturing Company

Coldbrook and Taylor, N. W. **Grand Rapids, Mich.**

Lancashire Induction Motors



For Woodworking Plants, Planing Mills etc.

The dust-laden atmosphere of woodworking plants, planing mills, etc., is a severe test for motors. Unless they are specially designed to meet such conditions, endless trouble will be the result. Lancashire Enclosed Ventilated Type Induction Motors are designed to eliminate all motor troubles, due to clogging. They require very little attention, an inspection and greasing every six months being all that is necessary to keep them in good order.

If you are contemplating the installation of any motors in your plant, write our nearest branch for descriptive folders.

Lancashire Dynamo & Motor Co. of Canada, Ltd.

45 NIAGARA ST., TORONTO

275 Craig St. West, Montreal **Smith Robinson & Co., Vancouver**

General Woodworking Trade Mart

Quick Action Section

Equipment Materials Employment

For Sale

Entire equipment of up-to-date Woodworking Plant. Machines, shafting, belting, pulleys, engine, boilers, etc., in first class condition, individual or collective sale. Must be sold quickly. Send inquiries or personal inspection invited. Phone, wire, or write, "Midland Woodworkers Limited", Box 727, Phone 37, Midland, Ont. 7-10

FIVE

of these machines have been sold but we have 195 left.

What Do You Want

SHAPERS

American Bronze Bearing Two Spindle.
Ballantine Two Spindle.

SURFACERS

Preston 24" Pony Planer.
Major Harper 24" Pony Planer.
Jackson-Cochrane 24" Endless Bed.
American No. 112 26" Double Surfacer.
American No. 49 30 x 12 Double Surfacer.

MOULDERS

Yates 12" No. 108 Four Side.
American 10" No. 26 Four Side.
Cowan 12" M-152 Four Side..
Cowan 10" M-152 Four Side.
American 8" No. 505 Four Side.
Yates C-4 8" Four Side.

SAWS

34" American Band Saw.
28" Post Band Saw.
American Double Arbor Universal.
Ballantine Self-feed Rip Saw.
American Swing Saws.
American No. 4 40" Band Resaw.
American Scroll (Jig) Saw.
American No. 25 Edging Saw.
Mershon No. 1 Band Rip Saw.
Mereen-Johnson Box Rip Saws.
Mereen-Johnson Box Cut-off Saws.
Yates No. 229 Double Cut-off Saw.
Mereen-Johnson Cleat Saws.
Mereen-Johnson No. 145 Horizontal Band Resaw.
Mershon 54" Twin Band Resaw.

MISCELLANEOUS

Dovetailer.
Filing Room Equipment.
Box Machinery of all kinds.
25 cycle, 3 ph. 550 volt Motors, 5—25-40 H.P.
Factory Trucks.
Veneer Jointer, Clipper, Glue Spreader, and other Veneer Room Equipment.

Garlock Machinery Limited,

Office:
320 Bay St. Phone Adel. 6350
Warehouse:
163 Dufferin St. Phone Lakeside 7855
8-11 TORONTO

For Sale

Wood turning shop doing custom turning and manufacturing, together with fine brick house. In operation every day. Doing good business. Excellent opportunity for good hand turner. Satisfactory reason for selling. Apply Box 164, Canadian Woodworker, Toronto, Ontario.

Your Factory Engineer

Should receive twice monthly a magazine that will tell him how to eliminate electrical troubles in the factory and show him how to cut your power costs. The ELECTRICAL NEWS is published for the benefit of users of electricity and contains valuable information for all factory superintendents who use electric power. $2.00 per year of 24 issues. Write to 349 Adelaide Street, West, Toronto. 6-t.f.

Nailing Machine

1—practically new, No. 16, Morgan 36" Open Back Nailing Machine, latest type, with Cleating and Clinching Attachments; Power raising and lowering device to table. Price $1600.00 f.o.b. cars, Bridgewater, Nova Scotia. Immediate shipment, subject prior to sale. Apply: FLEMING & MACLEAY, AGENTS, Bridgewater, N.S. 7-T.f.

Factory Surveys Made

Some factories make a profit but should make more. Other factories lose money yet should be making a profit. I have been making practical surveys of Furniture factories for 20 years. Have had free access to hundreds of factories and know what makes some successful and others failures. Have also built and managed factories. If interested—address Box 163 care Canadian Woodworker, Toronto. 9-12

Reed and Cane Come From Far East

The increased use of fibre in baby carriages and furniture has not reacted against the demand for rattan in Singapore, India, according to Clarence H. Christian who has just returned from the Orient where he represented the Heywood-Wakefield Company, the well-known manufacturer of reed and cane goods.

"When we in the Orient realized how important fibre had become in the manufacture of baby carriages and furniture, we began to expect far less demands from manufacturers for rattan," said Mr. Christian in a recent interview at Wakefield, Massachusetts. "When the demand increased rather than decreased, we were amazed and it was not until my return to North America that I found the reason.

"The reason is that more furniture of the wicker type is being used in America and Canadian homes than ever before. Once there were but few pieces of reed found on the average dealer's floor. Today he gives over most of his space to it in the spring and summer, and then carries a large display in the fall and winter.

"Formerly American and Canadian home lovers used reed furniture on their porches, but today it is found to predominate in many living rooms, in sun parlors and on open porches. In addition, odd pieces are being used in every room in the home, because there is no furniture like reed or fibre which will give a touch of brightness or cheer to a room."

"The shipments of rattan (which is reed in a raw state) will be larger during 1923 than during any previous year," asserts Mr. Christian.

"The supply of rattan is governed by the demand for it from foreign buyers and by prices paid for rubber and timber."

He says that if the prices for the two latter products are high then the supply of rattan suffers, because the natives can make more money and make it more easily by harvesting rubber and timber than they can by gathering rattan.

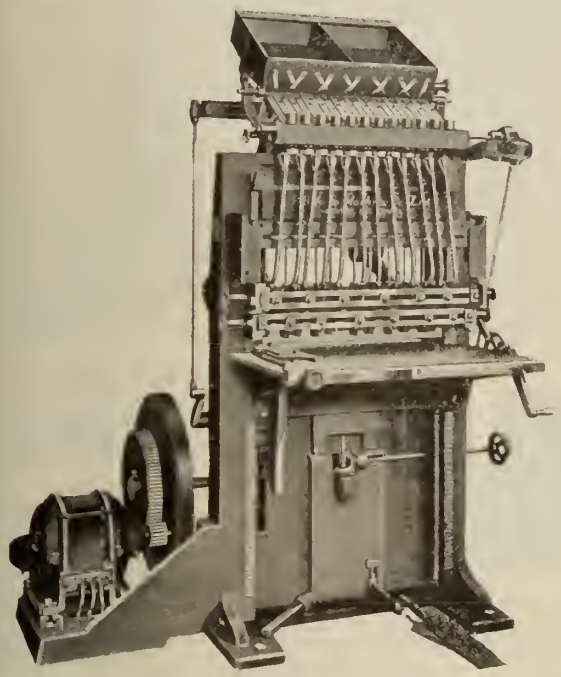
He insists that the supply of rattan is not endangered by the fact that natives have been cutting it for years, and have not attempted to assist nature in replacing the harvested crop. He says there is enough rattan left in the jungles to supply the world for generations.

Competition is keen between American and other buyers. Before the war German buyers were very numerous, but they are almost a thing of the past in Singapore today. The French, however, have increased and offer the stiffest competition to the Americans. There is also very keen competition between American buyers.

Mr. Christian adds that the Chinese merchants are very modern in their dealings. He says that the "old timers" are much the better to deal with because they are more honest, more reliable and will give better service. Buyers pay the Chinese in checks for their rattan.

Mr. Christian says that rattan in its original state is known as "rotan." It grows in vines, which wind their way snake-like for 500 feet through the densest part of the jungles. The vines measure from one-quarter to two inches in diameter. Natives of Borneo and others go through the jungles, and cut the rotan vine near the root. As the vine dries, the leaves fall off and the outer bark loosens. Natives remove the outside bark, and cut the center of the vine into lengths of about 18 feet. These lengths are known as "rattan."

INCREASE YOUR BOX PRODUCTION WITH YATES NAILING MACHINES



Because of its wide range of work and quick adjusting features Yates No. 1230 Open Back Nailing Machine has met with the unqualified approval of Box-Makers.

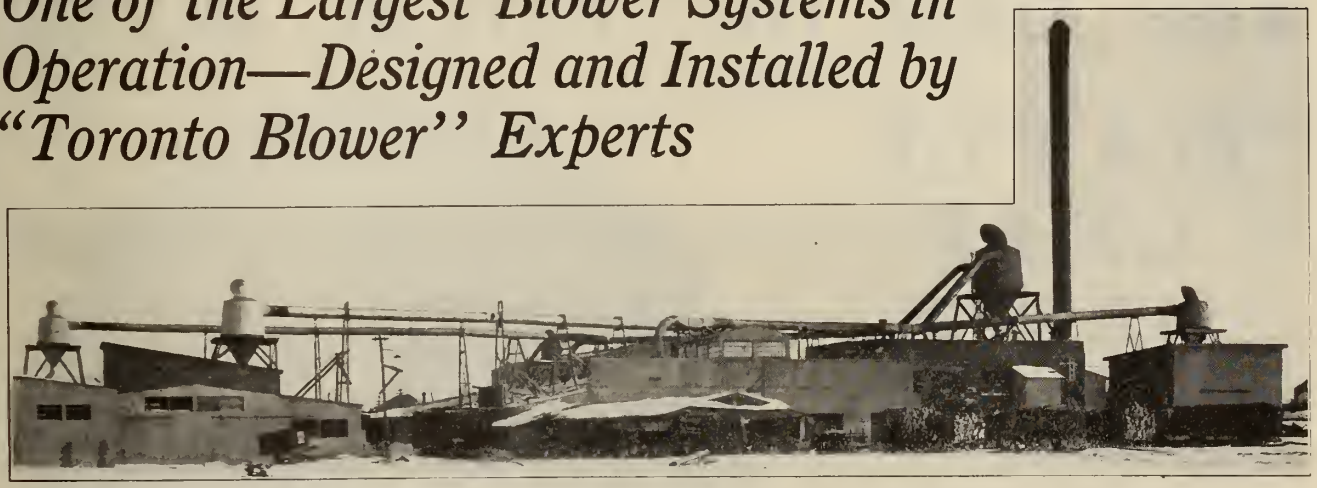
Can be used as a cleater, framer, or bottomer. Is equipped with adjustable blocks for supporting cleats when used as framer or bottomer.

Clinching device is built into the table of machine and can be instantly adjusted. Machine can be arranged for belt or direct motor drive.

These and many other features are found in Yates Nailing Machines, which insure ease in operation, save time and labor.

P. B. Yates Machine Co. Ltd.
HAMILTON - ONTARIO

One of the Largest Blower Systems in Operation—Designed and Installed by "Toronto Blower" Experts



No matter how large or how complicated your requirements, it is safe to say our engineers can design a system that is at once the most efficient and economical.

The photograph above illustrates this fact. It shows the blower system in the Pembroke Shook Mills as it stands today. The first system was built ten years ago, and as the mills grew, additions were made to the blower system, all work being carried out by us.

Ask the Pembroke Shook Mills what they think of Toronto Blower Systems.

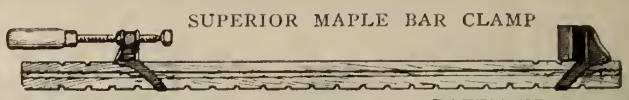
TORONTO BLOWER CO.

156 Duke St., Toronto

KANE VEGETABLE GLUE

The Superior Glue

Kane Manufacturing Co.
1832-42 S. Clark St.
Chicago — Illinois



PATENTED

The Best Cabinet Makers Prefer This Clamp

Superior Maple Bar Clamps have been adopted by Grand Rapids Factories and Training Schools because they give greater utility. They adapt themselves to use on all cabinet or fitting work, because the head and tail blocks swivel so as to hold firmly at any angle. These clamps will not marr the finest finish, and are guaranteed not to break under reasonable use. Very moderately priced.

Write for prices and catalogue showing line of clamps and hand screws.

Profitable Territory Open Salesmen May Carry as Side Line

Superior Hand Screw & Clamp Co.
1033 W. Leonard St., Grand Rapids, Mich.

The Peter Hay Knife Co., Ltd.

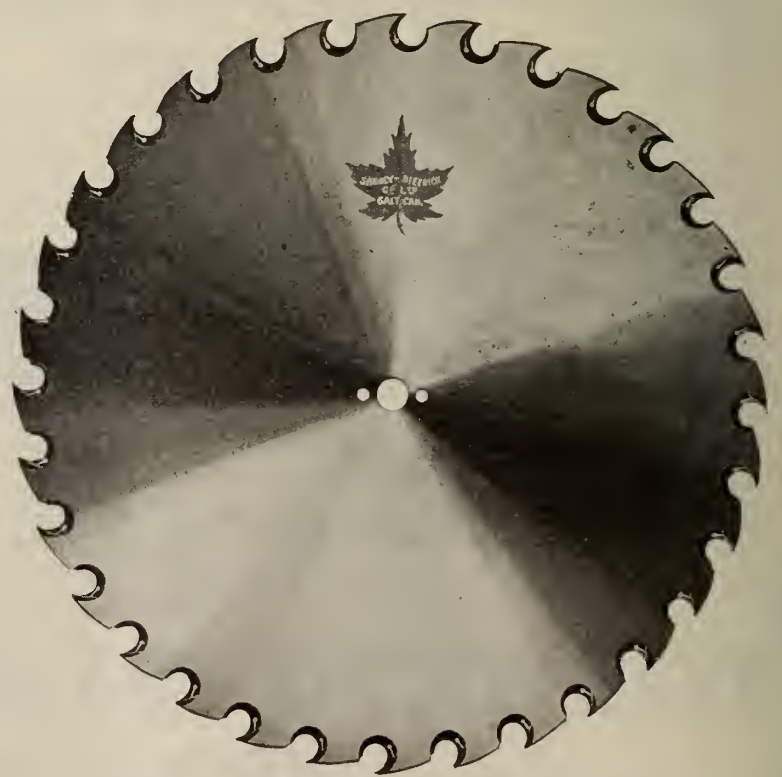
Manufacture the Best
PLANER KNIVES and CUTTERS
OF ALL DESCRIPTIONS

The Peter Hay Knife Co., Limited
GALT, ONTARIO

The Best for YOUR Work

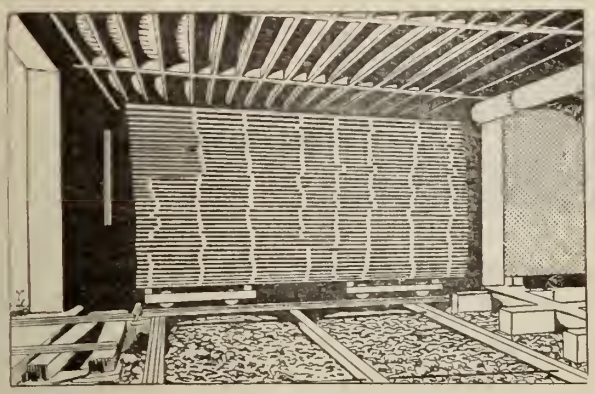
MAPLE LEAF SAWS

Maple Leaf Saws are fast cutting and retain their edge longer than any other saws, because they are made from extra refined Razor Steel, tempered by our own secret process.



Shurley - Dietrich Ltd.
Galt - Canada
Warehouse and repair branch at Vancouver, B. C.

"The largest all-Canadian saw Manufacturers"



What They Say

Everyone interested in quicker and more thorough drying of lumber (with lessened degrade) should hear or read what owners have to say about the Sturtevant High Humidity Dry Kiln.

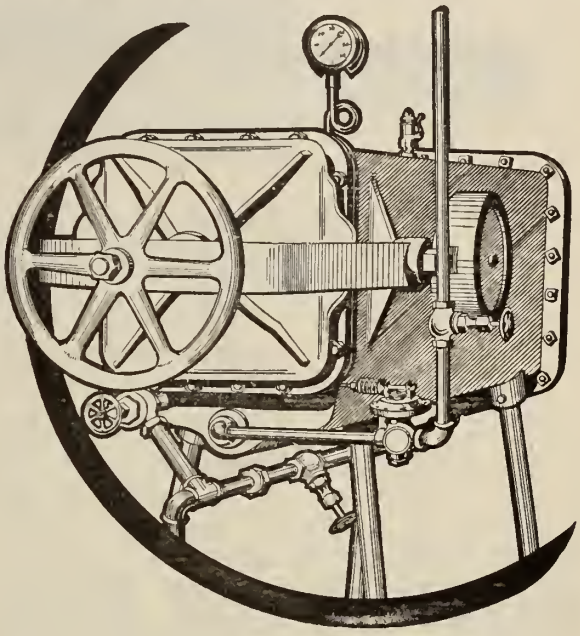
They say that decreased costs and increased profits, resulting from more rapid turnovers, have established the economy and efficiency of the Sturtevant Kiln, beyond question.

Ask for folder 602

B. F. Sturtevant Co.
of Canada, Ltd.
Montreal Galt Winnipeg Toronto

Sturtevant
PUTS AIR TO WORK

Wood Steaming Retort



Wood Bending Manufacturers:

This is one of our

Perfection Retorts

which we guarantee will save you

50% Less Breakage

in your bending department than your present process; that your stock will dry in your forms or presses in one-third less time; that you will have no stained stock; that your stock will retain its shape much better after being bent; that it will dry in your dry kiln in one half less time and that your steam consumption will be reduced at least 90 per cent.

The door can be opened and closed in ten seconds, and it is steam and water tight and for this reason can be placed anywhere in your factory.

Compare this IMPROVED RETORT with your present steam boxes, then write us for our Booklet on Progressive Wood Steaming.

Made in Preston, Ontario

Perfection Wood Steaming Retort Co.
PARKERSBURG — WEST VIRGINIA

The Shimer Round Safety Cylinder with High Speed Knives

A Round Safety Cylinder that will Appeal to the Buyer and the User for three Reasons:

The first is our adjusting nut for setting the knives. It is the only cylinder with properly located adjusting nuts for setting the knives, which, with our way, can be set to 1-1000 of an inch.

The second is our way of holding the knife without tapping into the head.

The third is the correct angle of cut for the knives.

Made for any of the different Makers' Machines and in Any Length Cylinder

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SHIMER CUTTER HEAD CO., OF CANADA, LIMITED

Manufacturers of Cutter Heads, Safety Cylinders and Grinders

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Keenest Cutting - Longest Wearing

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Saws users who try Beaver Brand Saws for the first time experience a new satisfaction. They find these saws cut faster, and retain their keen edge longer, thus lowering costs appreciably.

If you are not acquainted with Beaver Brand Saws, write for prices and particulars.

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We are completely equipped to take care of your repairs on damaged saws and guarantee satisfactory work at moderate prices.

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Brand New Metal and Woodworking Machinery and Equipment. We offer the entire plant at far below market values.

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1—American Fig. 982. No. 2½ Horizontal Boring Machine.
2—Greenlee No. 386 Multi-spindle Boring Machines.

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1—Baxter D. Whitney No. 2, Cont. Feed Jointer.
1—Baxter D. Whitney 30" Single Scraping Machine.
1—Baxter D. Whitney 30" Scraper Knife Grinder.
5—Baxter D. Whitney No. 39A Double Spindle Shapers.
1—Curtis Rubbing Machine, Model 48, Piano type.
1—Woods No. 131 Fast Feed Moulder.
1—Curtis No. 100 Emery Stand & Shaft.
1—Diehl 6-section, 10 ft., 16-leaf, 30" clamp.
6—Emerson Auto. Compression Moist Air Kilns, with track, fittings, etc.
2—H. B. Smith No. 205B Double end Tenoners.

Saws, Saw Benches and Saw Tools

2—American No. 507, 42" Band Saws.
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1—Bass Band Saw Setting Machine.
1—Bass Band Saw Brazing Machine.
1—H. B. Smith Gang Dado Saw.
7—Baxter D. Whitney No. 61D Saw Benches.
1—Cowan No. 315 Jig Saw.
1—Cowan No. 230 Variety Saw.

Sanders

1—H. B. Smith 34" Horiz. Disc Sander.
1—Cowan Double Face Sander.
1—American Fig. 1097 No. 15 24" Single Sander.
3—Curtis 6 ft. Model 8, Belt Sander.
1—Curtis Edge Belt Sanding Machine.
4—Curtis Edge Sanders Model 45.
2—H. B. Smith No. 401D Sanders.

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10—American Portable Furniture Case Clamps.
5—Dome and Frame Clamps.
12 Carpenter Clamps.
1—Frances Glue Spreader, 38".
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Miscellaneous tools consisting of Veneer Calipers, Squares, Tools, Bits, etc.
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Tell us what you need. *We will quote promptly.*

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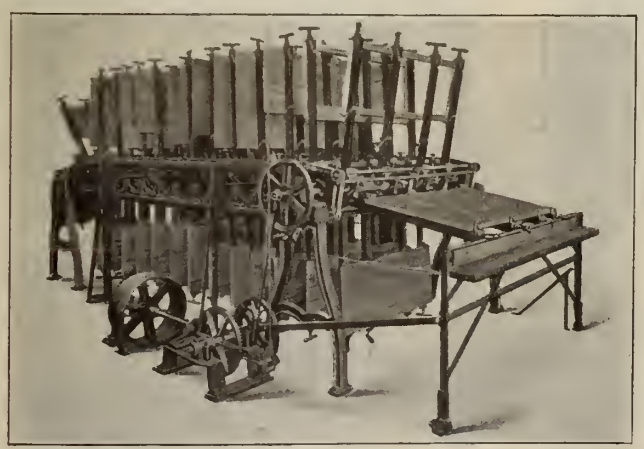
One Man Does the Work of Two

with a Billstrom Glue Clamp Carrier



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Here's why:—

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When the clamp is filled he pulls a cord, which carries the filled clamp away and deposits an empty one in its place.
One man can accomplish as much by using it as two men can do employing the old methods.
It holds the work off the floor until the glue has set, when the glued stock can be quickly removed and piled flat, thus greatly conserving space.
It reduces the labor and cost of edge gluing to the minimum.

There is a size to suit your particular requirements.

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Greater Spread
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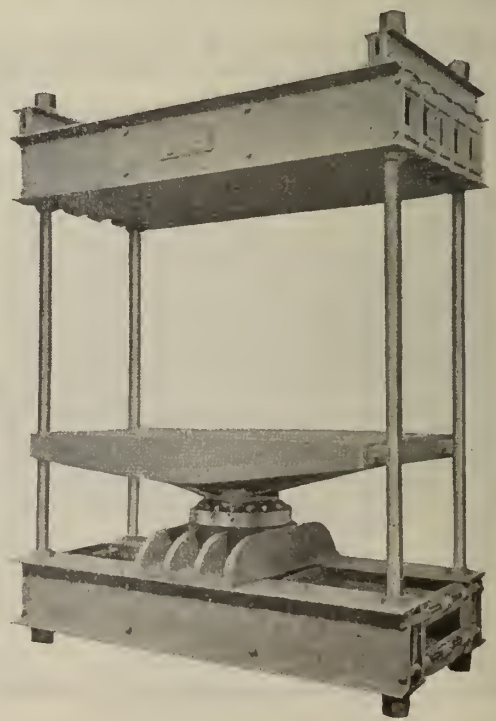
We will gladly give you full particulars and show you what users have to say about it without obligation to you.



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Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

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Only $2.00 per year

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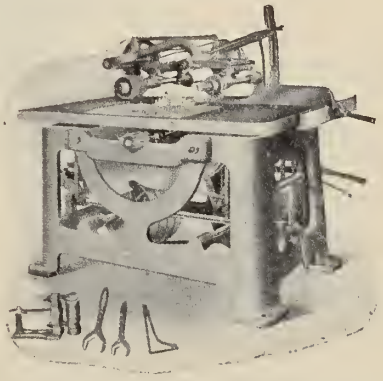
is now made in eight styles



You will find one of these styles especially designed for your work.

No 1 the well known Standard, rips 6" thick, 17" wide; resaws to 6", adapted to single, gang or bevel ripping; the feed will pull six saws through 1" stock.

No. 2 is the No. 1 machine built with one stationary and one movable saw, which is adjustable while running to the full width of the collar space 8½".

No. 3 is especially designed for short gang ripping and will rip as short as 6½".

No. 4 is the No. 1 but built with a wider frame and has 14" collar space where the No. 1 has 8½" collar space.

No. 5 same as No. 2 and has movable saw, which travels the full width of the 14" collar space.

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No. 7 is the same as No. 1, except that it is built with a third or intermediate feed roll and is especially designed for gang ripping.

No. 8 is the same as No. 4, except that it is built with a third or intermediate feed roll and is especially designed for gang ripping.

The reliability and efficiency of Hoosier Rip Saws are known to woodworkers everywhere. They are made in the best possible manner.

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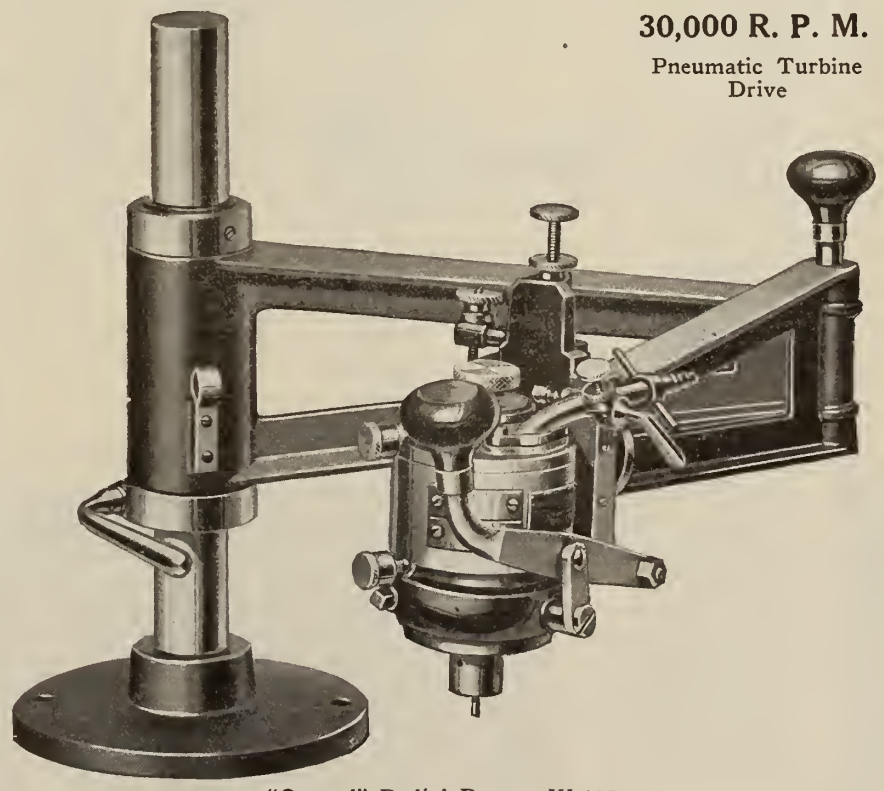

"Onsrud" Radial Router, W-105

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CASTINGS
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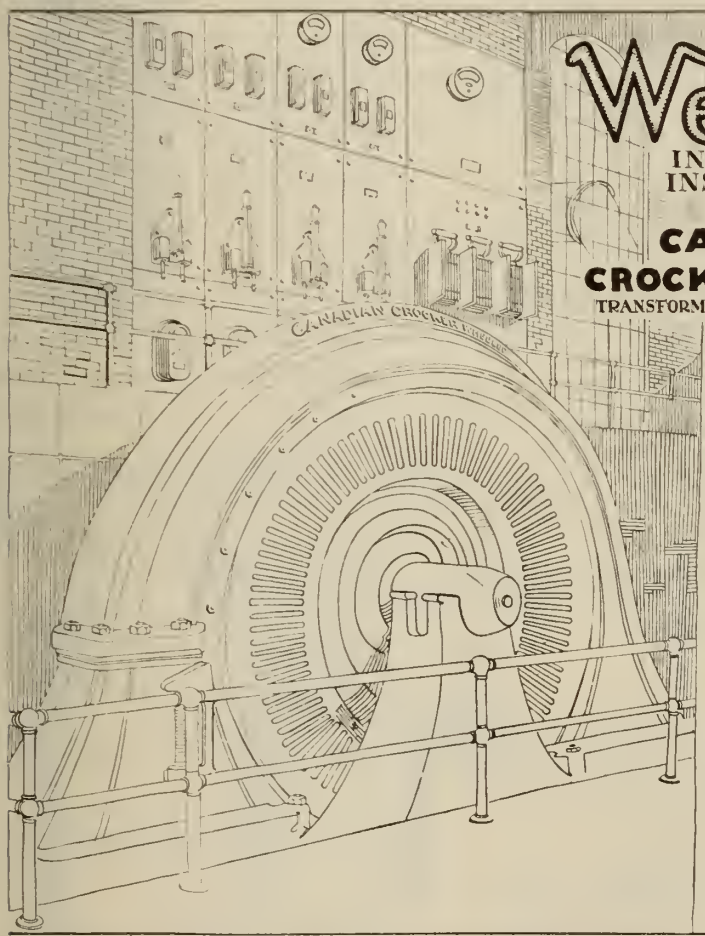

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GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Mattison Machine Works, Rochford, Ill.

GUM LUMBER
Hyde Lumber Company, South Bend, Ind.
Kirby Bonner Lumber Co., Houston, Texas
Merceau-Hawkins Tie Co., Huntington, W. Va.
Sondheimer Co., E., Sondheimer, La.
South Texas Lumber Co., Houston, Texas
Toronto Hardwood Lumber Co., Toronto, Ont.

HAND SCREWS
Fay & Egan Co., J. A. Cincinnati. Ohio.
Superior Hand Saw and Clamp Co., Grand Rapids, Mich.

HANGERS
Bond Engineering Works, Toronto, Ont.
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

HANDLE & SPOKE MACHINERY
Fay & Egan Co., J. A. Cincinnati. Ohio.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Nash, J. M., Milwaukee, Wis.

HARDWARE
Larsen & Shaw Ltd., Walkerton, Ont.

HARDWOOD LUMBER
American Plywood Corp., New London, Wis.
Anderson, Shreiner & Mawson, Toronto, Ont.
Atlantic Lumber Company, Toronto, Ont.
Bedna Young Lumber Co., Jackson, Tenn.
Banning, Leland G., Cincinnati, Ohio.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Canadian General Lumber Co., Toronto, Ont.
Des Moines Sawmill Co., Des Moines, Iowa
Hyde Lumber Co., Memphis, Tenn.
Heeney, Percy E. Kitchener, Ont.
Kirby Bonner Lumber Co., Houston, Texas
Kneeland-Bigelow Co., Bay City, Mich.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Louisville Point Lumber Co., Louisville, Ky.
Long-Bell Lumber Co., Kansas City, Mo.
McDonagh Lumber Co., Toronto, Ont.
Luehrman Hardwood Lbr. Co., St. Louis, Mo.
Mercereau-Hawkins Tie Co., Huntington, W. Va
Mississippi Hardwood Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Oliver Lumber Co., Toronto, Ont.
Otis Mfg. Co., New Orleans, La.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Ritter Lumber Co., W. M. Columbus, Ohio.
Sondheimer Co., E., Sondheimer, La.
Stack Lumber Co., Escanaba, Mich.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Stimson & Co., J. V., Owensboro, Ky.
Terry-Nicholson-Cates Ltd., Toronto, Ont.
Toronto Hardwood Lumber Co., Toronto, Ont.
Wood Mosaic Co., Louisville, Ky.
Willey Co., C. L. Chicago, Ill.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HARDWOOD LUMBER (Kiln Dried)
Rathbone, Geo. Ltd., Toronto, Ont.

HARDWOOD FLOORING
Eaton & Sons J. R. Orillia, Ont.

HEATING SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

HOISTING EQUIPMENT
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

JOINTERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Hay Knife Co., Peter, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shimer Cutter Head Co., of Can. Ltd., Galt.
Simonds Canada Saw Co., Montreal, P.Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNOBS
Waddell Mfg Co., Grand Rapids, Mich.

LACQUERS
Cosmos Chemical Co., Port Hope, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Klotz Machine Co., Sanducky, Ohio.
Mattison Machine Works, Rochford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

LEGS
Klise Manufacturing Co., Grand Rapids, Mich.

MAHOGANY
Otis Mfg. Co., New Orleans, La.
Toronto Hardwood Lumber Co., Toronto, Ont.

MACHINE KNIVES
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

METHYLATED SPIRITS
Canadian Industrial Alcohol Co., Montreal

MAGNOLIA
South Texas Lumber Co., Houston, Texas

MILL PIPING
Toronto Blower Co., Toronto, Ont.

MITRE SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company. Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS
Sturtevant, B. F. & Co., Galt, Ont.

MOTORS
Lancashire Dynamo & Motor Co., Toronto,
Northern Electric Co., Montreal, Que.
Sturtevant, B. F. & Co., Galt, Ont.

MOTOR PULLEYS
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati. Ohio.
Nash, J. M., Milwaukee, Wis.

NAILING MACHINES
Yates Machine Co., P. B., Hamilton, Ont.

OAK FLOORING
Rathbone, Geo. Ltd., Toronto, Ont.

PAINT
Marietta Paint & Color Co., Marietta, Ohio.
Sanderson Pearcy & Co., Toronto, Ont.

PAINT DRYERS
Sanderson Pearcy & Co., Toronto, Ont.

PAINT SPRAYING EQUIPMENT
DeVilbiss Mfg. Co., Toledo, Ohio

PANELS
Hay & Co., Woodstock, Ont.
Pannill Door Co. Ltd., Toronto, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PATTERN PINE
Rathbone, Geo. Ltd., Toronto, Ont.

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

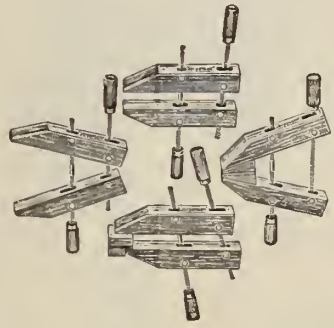
ORILLIA ONTARIO

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

The "JORGENSEN"

Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws



The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."

"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

Manufactured only by the

Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

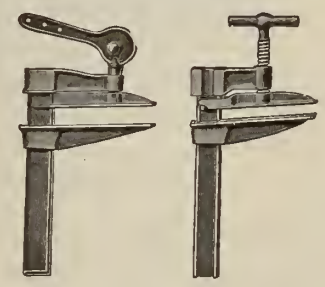
For Sale By

Aikenhead Hardware Limited .....Toronto
Lewis Bros., Limited .....Montreal

Colt's Clamps

for the

Woodworker



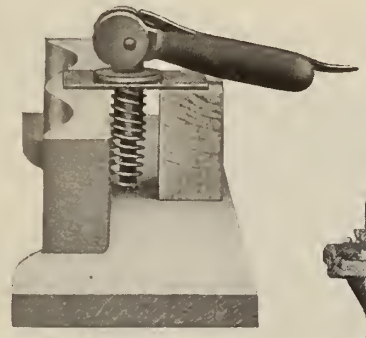
Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

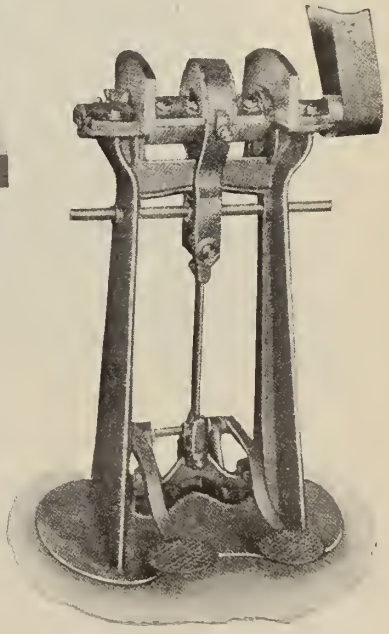
For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.



Pettingell Stock Clamps for holding stock on forms or jigs when milling or cutting irregular shapes of stock on Dressers — Shapers or Moulding Machines.



Irregular Dresser or Shaper

This machine is designed for dressing all odd or irregular stock to shape. Especially suitable for box pattern work. Necessary in every mill where body stock is turned out.

Woodworking Machines

No. 19 Small Saw Tenoner.
No. 21 Regular Bevel and Mitre Saw.
No. 23 8½-inch Irregular Dresser.

Woodworking machines equipped.

No. 20 Large Saw Tenoner.
No. 22 Large Bevel and Mitre Saw.
No. 24 6-in. Irregular Dresser Stock clamps.

with direct motor or belt drive.

Write for catalogue

PETTINGELL MACHINE COMPANY

AMESBURY - MASS.

"Canadian Woodworker" Buyers' Directory—Continued

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
General Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Toronto Blower Co., Toronto, Ont.
Williams Machinery Co., A. R. Toronto, Ont. Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corp., New London, Wis.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

POWER APPARATUS
Northern Electric Co., Montreal, Que.

POWER & LIGHT PLANTS
Fischman Spring Co., Kitchener, Ont.

POWER TRANSMISSION MACHINERY
Bond Engineering Works, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PRESSES (Veneer)
Bond Engineering Works, Toronto, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin, Wm. R. Toronto, Ont.

PULLEYS
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PUMPS—Condensation and Return
Canadian Blower & Forge Co., Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

RATTANS
Carter, E. T., Toronto, Ont.

REEDS
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RETORTS
Perfection Wood Steaming Retort Co.,

REVERSIBLE PLANING MILL FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FELLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SANDPAPER
Behr & Co., Herman, Brooklyn, N. Y.
Canada Gluc Co., Brantford, Ont.
Carborundum Co., Niagara Falls, N.Y.
Sanderson Pearcy & Co., Toronto, Ont.

SASH DIMENSION
Pannill Door Co., Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW SHARPENERS
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
General Machinery Co., Toronto, Ont.
Cowan & Company, Galt, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

SHAFTING
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.
Bond Engineering Works, Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

SHELLAC
Marietta Paint & Color Co., Marietta, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

SINGLE SPINDLE BORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

SOFTWOODS
Big Bear Lumber Co., Toronto, Ont.
Canadian General Lumber Co., Toronto, Ont.
Rathbone, Geo., Limited, Toronto, Ont.
Heeney, Percy E. Kitchener, Ont.
Luehrman Hardwood Lumber Co. Chas. F., St. Louis, Mo.
Terry-Nicholson-Cates Ltd., Toronto, Ont.

SPRINGS
Ideal Fence & Spring Co., Windsor Ont.

SPRING MATTRESSES
Fischman Spring Co., Kitchener, Ont.

SPRING CONSTRUCTION
Fischman Spring Co., Kitchener, Ont.

SPROCKETS
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

SPRUCE DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM & OIL SEPARATORS AND REFINERS
Smart-Turner Machine Co., Hamilton, Ont.

STEEL BALLS
Canadian SKF Co., Toronto, Ont.

STEEL PLATE PLANING MILL EXHAUST
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

STEEL PRESSURE BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE RIMS
Bruce Woodworkers Limited, Chesley, Ont.

TABLE SLIDES
Bruce Woodworkers Limited, Chesley, Ont.
Watertown Table Slide Co., Watertown, Wis.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

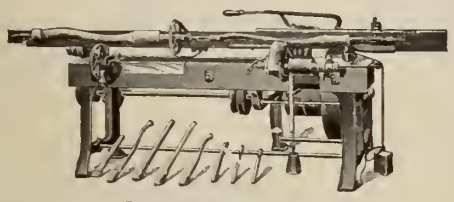
TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
McKnight & Son Co., L. G., Gardner, Mass.
Pettingell Machine Co., Amesbury, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Klotz Machine Co's
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

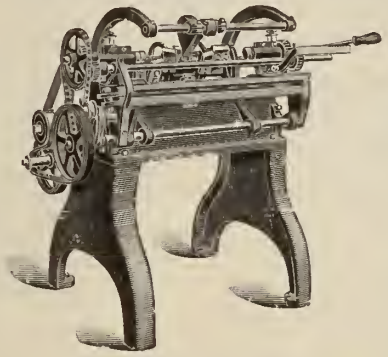
We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

MANUFACTURED BY

Klotz Machine Co., Sandusky, O., U. S. A.

Write for descriptive circulars and prices.

HANDLE MACHINERY



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GREATEST PRODUCTION

at

LOWEST COST USE

"OBER"

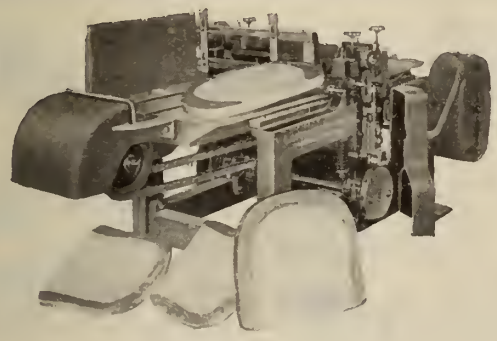
TURNING LATHES, RIPSAWS, SANDERS, CHUCKING MACHINES, etc.

We make machines for turning Axe, Pick, Sledge Hammer, Hatchet, Fork, Rake, Broom, Chisel, File, Knife handles, etc.

Write for free catalogue No. 31.

The Ober Mfg. Co.

Chagrin Falls, O., U.S.A.



McKnight No. 1 E

CONTINUOUS AUTOMATIC SADDLE SEAT MACHINE

Machine is arranged for saddling or scooping seats of any desired size or shape. Eliminates hand scraping and considerable sanding. Machine cuts six, eight, or ten seats per minute —depending upon material used.

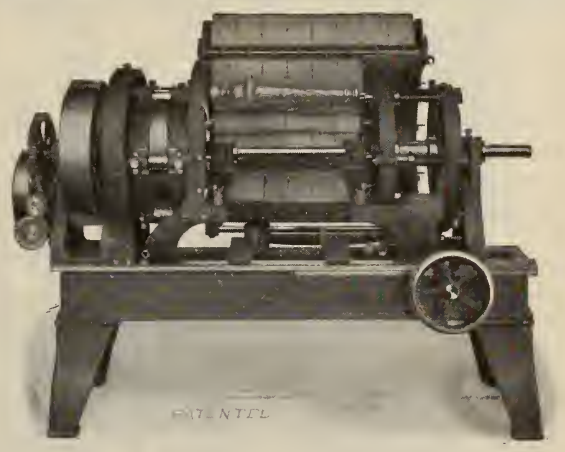
Let us tell you more about it.

L. G. McKnight & Son Co.

CHAIR MAKING MACHINERY

GARDNER, MASS., U.S.A

Are You Satisfied



with the sanding of your furniture turnings?

Unless you have a NASH SANDER you are not getting the best possible results either in quantity or quality.

Ask for my demonstration and trial proposition.

J. M. NASH, Milwaukee, Wis.

"Canadian Woodworker" Buyers' Directory—Continued

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National Dry Kiln Co., Indianapolis, Ind.

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Sturtevant, B. F. & Co., Galt, Ont.

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

TURNED WOOD GOODS
Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TURPENTINE
Carter, E. T., Toronto, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

TWIST WORK
Klise Manufacturing .Co., Grand Rapids, Mich.

TWISTING AND FLUTING MACHINES
Shawver Co., Springfield, Ohio

UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

VACUUM PUMPS
Canadian Blower & Forge Co., Kitchener, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

VARNISH
Marietta Paint & Color Co., Marietta, Ohio
Sanderson Percy & Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Acme Veneer & Lumber Co., Cincinnati, O.
American Plywood Corp., New London, Wis.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Hartzell, Geo. W., Piqua, Ohio.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Nickey Bros., Memphis, Tenn.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER DRYERS
Nichols Company, A. S. New York, N.Y.

VENEER SAWS
Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin, William R. Ltd.
Preston Woodworking Machinery Company, Preston, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WALNUT LUMBER
Des Moines Sawmill Co., Des Moines, Iowa.
Hartzell, Geo. W. Piqua, O.
Kirby Bonner Lumber Co., Houston, Texas
Toronto Hardwood Lumber Co., Toronto, Ont.

WASTE
Carter, E. T., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Pettingell Machine Co., Amesbury, Mass.

WOOD STEAM RETORTS
Perfection Wood Steaming Retort Co., Parkersburg, W. .Va
Shawver Co., Springfield, Ohio

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.

Speed + Perfect Joints = Low Costs

REG. U.S. PAT. OFF.
The Taylor TRADE MARK

CLAMP CARRIER
for
Small Jobs in the Big Plant
All Jobs in the Little Plant

1. Natural standing position of operator.
2. No Juggling of heavy clamps.
3. No bending or walking.
4. No pile to overturn to get work glued first—simply move clamp one section.
5. Less space than equal number of clamps with work in, piled on the floor.

Any size to suit your work. 8 and 12-section wheel type. 16, 20, 30 and 40-section chain type. 4, 5 or 6 clamps per section for stock up to 42-in. wide.

Representatives:
A. R. Williams Machinery Co., Toronto. Canada

James L. Taylor Mfg. Company
Poughkeepsie, N.Y., U.S.A.

MACHINERY FOR SALE

New C.M.C. No. 19 Sash-Clamp, Capacity 6-5 x 4-6	$150.00
Cowan & Co. Automatic Hollow Chisel, Mortiser No. M189	200.00
Cowan & Co. Power Mortiser, M3	50.00
Shimer & Co. Matcher Head Grinder	100.00
Smith & Phillips No. 3 Window Frame Machine	350.00
Hermance Moulder, 8"	650.00
Lucas Belt Sander, No 426 & 3 H.P. Westinghouse Motor	800.00
Shimer Heads for 1 7/16. 1 Pr ⅞ Flooring 6 Bits	40.00
1 Pr. 1¼ Flooring 4 Bits	30.00
1 Pr. ⅞ V Sheeting 4 Bits	35.00
1 Pr. 3", 2 Knife Heads	25.00

71 Feet 2 3/16 Steel Shaft and 7 hangers.
24 Feet 2 ⅜ shaft
5 Iron puleys 2 3/16 bore 10" x 30"
1 " " 8" x 24"
1 " " 8" x 40"
1 Wood spllit pulley 17" x 36"
1 " " " 9" x 36"
1 " " " 10" x 32"
1 " " " 7" x 26"
2 " " " 12" x 24"
1 " " " 9" x 24"
1 " " " 12" x 22"
1 " " " 10" x 22"
2 " " " 10" x 20"
1 " " " 4" x 20"
1 " " " 9" x 16"

Less 50% off List Price

GEORGE RATHBONE LTD.

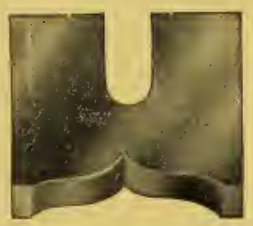
Northcote Ave., Toronto

ATKINS

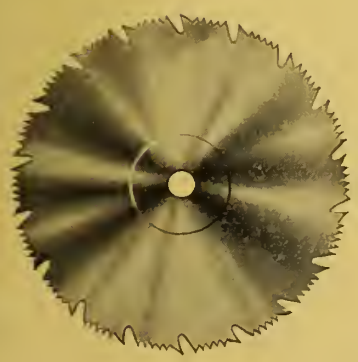
STERLING QUALITY

SAWS and KNIVES

ECONOMIZE



ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing



Atkins Sterling Quality Saws

and Machine Knives

Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.

Write to-day for our Knife Booklet "C.W." and Pattern Template Paper.

E.C. ATKINS & CO.

Makers of Sterling Saws

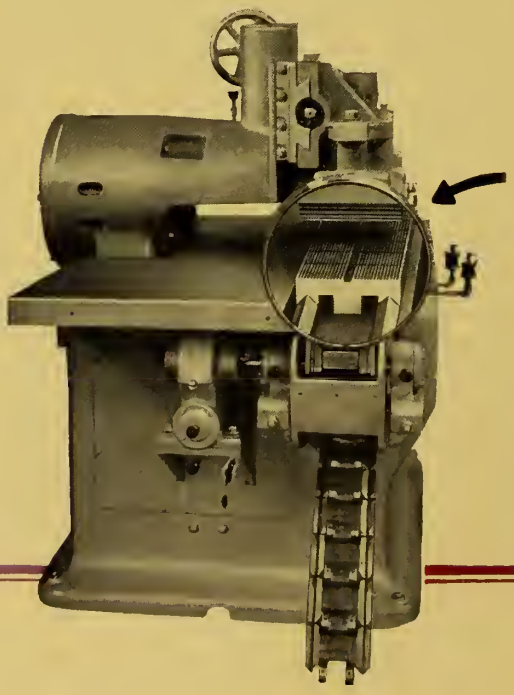
Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

Use Mattison Ripper for Glue Joints

V-Type Chain Prevents Misalignment

This new construction of the traveling feed chain, an exclusive feature on the Mattison Ripper, holds the chain in perfect alignment with the saw, insuring absolutely straight-line ripping throughout years of service.

The V's of the chain blocks and the V-shaped ways on which they ride, are carefully machined and are hand scraped to provide a perfect bearing between the angular surfaces. Any wear that may occur is automatically taken up by the V-shape.



MAKING perfect glue joints direct from the saw is regular practice in the Piano Factory where the above picture was taken.

Because it is built with extreme accuracy in every respect, and because complete provision is made for maintaining that accuracy for all time through positive take-up devices, the Mattison Rip Saw is becoming generally used throughout the woodworking industry for making glue joints on core stock.

In making joints on the glue jointer, you have to rip the stock first, anyway; then in putting it through the glue jointer, at least ¼ of an inch of lumber is wasted in each joint, besides the extra time and labor consumed in the operation.

Why not eliminate all that waste by jointing your core stock direct from the Mattison Rip Saw, without further preparation?

Ask for further reasons why this machine is capable of making perfect glue joints.

MATTISON
MACHINE WORKS
Main Office and Works:-Rockford, Illinois

Branch Sales Offices:

CHICAGO
1735 Republic Bldg.

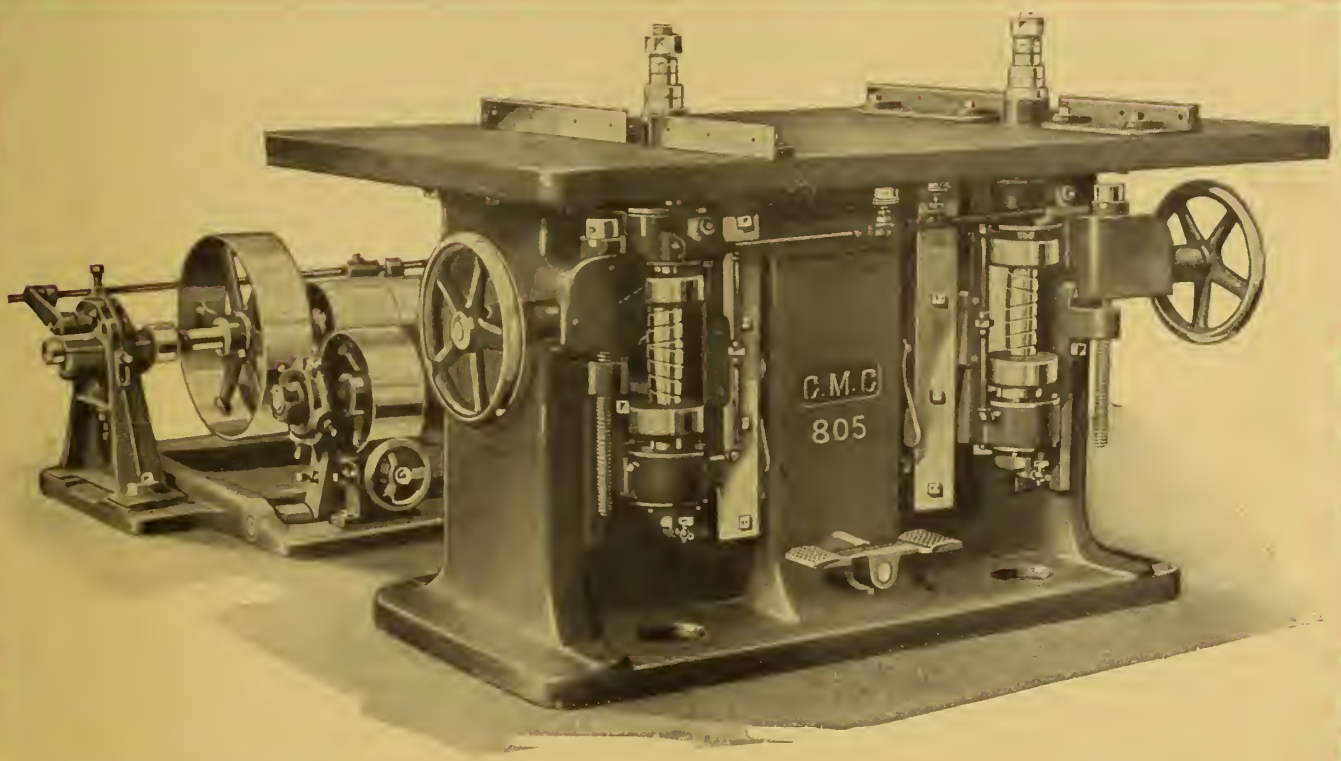
GREENSBORO, N. C.
513 Am. Ex. Nat. Bank Bldg.

NEW YORK
602-603 Times Building

SAN FRANCISCO
553 Monadnock Building

Volume Twenty-Three TORONTO, NOVEMBER, 1923 Number Eleven

CANADIAN WOODWORKER and Furniture Manufacturer



C.M.C.

No. 805 Double Ball Bearing Shaper

will positively accomplish from one third to one half more work than a babbit bearing machine, and in many cases the finish is fine enough to eliminate sanding.

Would not the saving in power, labor and and overhead on a year's operation justify this investment several times over?

Complete information will be gladly sent upon request.

CANADA MACHINERY CORPORATION
LIMITED

GALT — ONTARIO

Manufacturers of Iron and Woodworking Machine Tools

Toronto Sales Office - - - 721 Bank of Hamilton Bldg.

Alphabetical Index to Advertisers, Page 12

We regard our high reputation as Canada's foremost distillers of Alcohol for industrial purposes in the light of a responsibility rather than a reward — an obligation we have always discharged with lasting benefit to the trade as well as to ourselves.

This is Alcohol Headquarters for Canada —and for a very good reason.

Canadian Industrial Alcohol

Company, Limited

MONTREAL

Manufacturers of

MAPLE LEAF BRAND

Ethyl Alcohol-Cologne Spirits-Absolute Alcohol B.P.
Methylated Spirits and Denatured Alcohol (all formulae)

Distributing Warehouses

Montreal-Toronto-Winnipeg-Vancouver-

SKF

Ball Bearing Equipped Spindles
Permit Quicker, Cleaner Cuts

IF the cutter spindle bearings of planers, surfacers or jointers wear, the cylinder drops and the shaft becomes scored. Worn bearings cause vibration in the spindle, resulting in chatter marks on the work. This necessitates frequent setting of the cutter if the quality of the work is to be maintained.

SKF marked self-aligning ball bearings, however, hold the cylinder permanently in its original setting, since no appreciable wear takes place in the bearings.

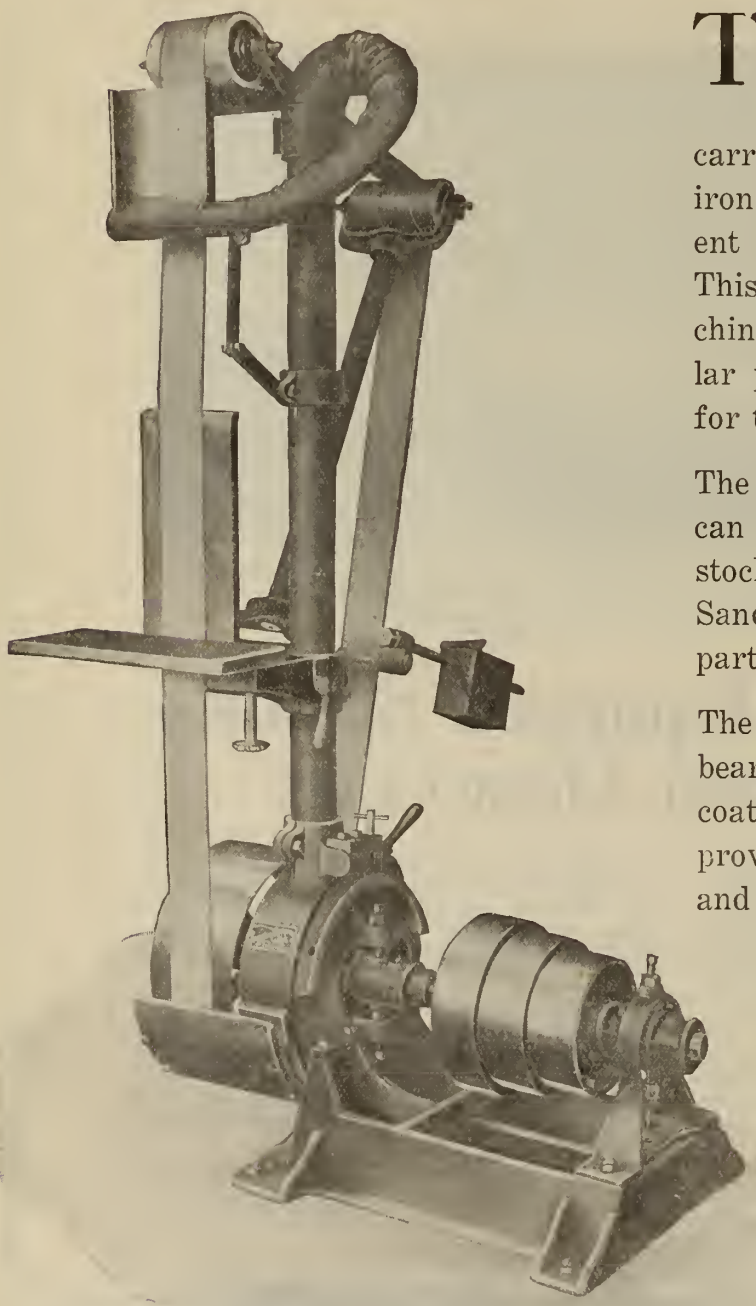
Speeds that permit quicker and cleaner cuts are made possible because self-aligning ball bearings are practically frictionless and have the exclusive inherent ability to compensate automatically for shaft deflections.

Cuts which formerly required running the work through twice can now be made in one operation. The extra power needed for the heavier cuts is that which ball bearings save over plain bearings. Our engineering department will gladly furnish detailed information.

CANADIAN **SKF** COMPANY, LIMITED
TORONTO MONTREAL

Normal View *Deflected View*

A Versatile Machine for Smoothing Out Your Sanding Problems



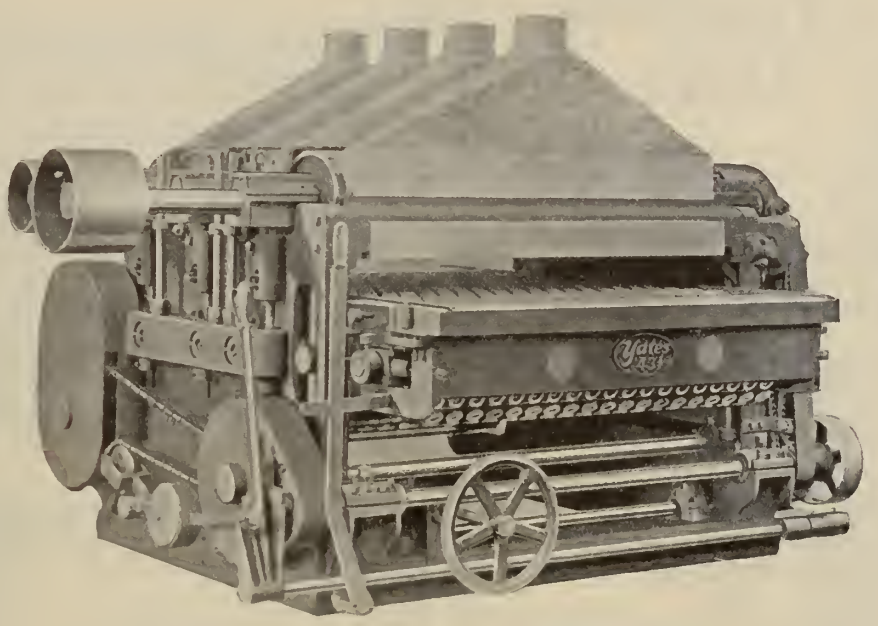
THIS Adjustable Variety Belt Sander is strongly constructed with a heavy broad floor base. The upright frame carrying the sand belt, turns on a large iron drum and can be adjusted to different positions and then securely locked. This permits the operator to use the machine in a Vertical, Horizontal or Angular position, whichever is most suitable for the work to be done.

The Table is made of hardwood strips and can be swung clear of the belt, allowing stock to be sanded lengthwise of the belt. Sand belts up to 8″ in width used with no part of it going to waste.

The Top Roll is equipped with SKF ball bearings and is covered with a heavy coating of rubber, vulcanized on the roll, providing an excellent driving surface and also a proper cushion for sanding.

Descriptive Circular sent on request.

JACKSON, COCHRANE & CO., KITCHENER, ONT.



Advantages that will Appeal to Users of Sanding Machines

Sand paper on the drums can be tightened up at each end independently or simultaneously. This is a great help when putting on the paper as it saves considerable time.

Should the paper become loose on the drums while machine is in operation, slack is taken up automatically, thus preventing paper buckling or tearing, which affords a saving in the sand paper used. The felt and paper are wound on the drums spirally, which gives you continuous cutting drums, furnishing a much smoother finish.

These are exclusive feautres embodied in Yates Endless Bed Sanders only.

Has automatic stop to prevent bed from running up into sanding drums. Yates Endless Bed Sanders are adapted especially for sanding narrow and short stock, taking pieces short as 3 inches. Will handle the big stock as well.

Built in three sizes 31, 43 and 49 inches wide.

Our Sander book describes this machine fully, as well as showing many different types and outlining their various uses.

P. B. Yates Machine Co. Ltd.

Hamilton - Ontario

The Invariable Choice Yates Of the Man Who Knows

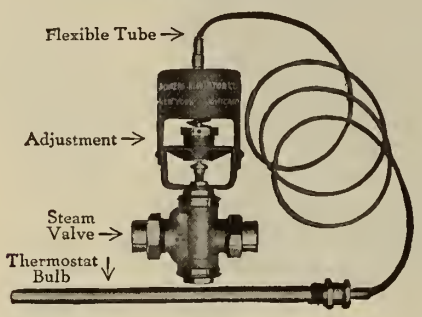
YATES

The Invariable Choice Yates Of the Man Who Knows

Your Troubles Are Over

Starved joints—glued pieces falling apart—veneer peeling off—burnt and spoiled glue —are eliminated when you control the temperature of your Hot Glue Kettles with a

Powers Regulator



It accurately maintains the glue at a steady UNIFORM temperature. Set this regulator for 150° F., and your glue kettles require no further attention. Simply turn on the steam in the morning and off at night, there's no worry about the kettles getting too hot or too cold.

It Costs Only 4 cents a Day. This regulator is entirely automatic and requires no air or electricity for its operation. It is very dependable and its only expense is for depreciation and interest which is only $0.0398 per day worked. At this small cost

Why Risk Your Reputation with occasional poor glue work? Isn't it worth 4c. a day to you to know that when a piece is glued that it will not come apart? Keep your glue at the proper temperature and you insure your customers' satisfaction, and efficiency in your shops.

Will You Make this FREE Test?

It costs you nothing to get first hand evidence of the savings obtained with this regulator. Test it on one of your Kettles for 30 days. If you are convinced that it is a mighty good investment for your firm, pay us for it; if not, return it. The coupon will bring you full particulars and prices. Will you send it?

The Canadian POWERS REGULATOR Co. Ltd

Specialists in Automatic Heat Control

106 Lombard Street — Toronto, Ont.

Calgary, Alta. Halifax, N. S. Montreal, Que.
Vancouver, B. C. Winnipeg, Man.

(2687)

The Powers Regulator Co.,
27 Greenview Avenue, Chicago

Let me have, without obligation, full particulars and prices of your regulators for Glue Kettles.

Name .....
Firm .....
Address .....

ECONOMIZE

If Sawdust and Shavings are allowed to accumulate on floors, beams, rafters and shelves **you pay** for your negligence in higher insurance rates.

Furthermore, **you pay** for it through decreased health and efficiency of employees—and accidents, with resulting indemnities.

Again, this wasteful dust hastens deterioration of motors and machinery, and **you pay** for this, together with increased costs of lubrication.

But you can save all this needless expense by removing Shavings and Sawdust before they have a chance to settle, by means of the Sturtevant Collecting and Conveying System.

Send for illustrated folder 602

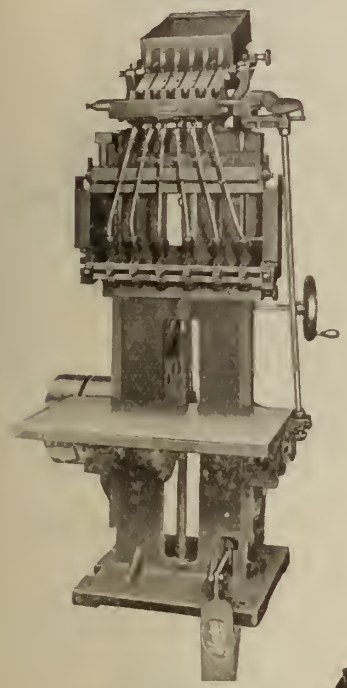
B. F. Sturtevant Co.

of Canada, Ltd.

Montreal Galt Winnipeg Toronto

Sturtevant
PUTS AIR TO WORK

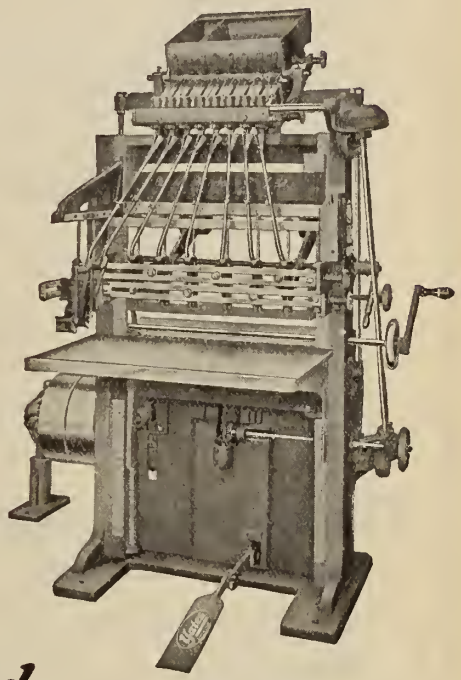
INCREASE YOUR BOX OUTPUT WITH THE LATEST IMPROVED NAILERS



CLOSED BACK TYPE

A Company installed a couple of our Nailing machines and wrote us later on saying. "There is no question, these machines have certainly increased our output and lowered our manufacturing costs."

Yates Nailing machines have been a success at every installation, as they have proven the saving which can be effected by their use. It may be worth your while to inquire about nailing machines for your business.



OPEN BACK TYPE

P. B. Yates Machine Co. Ltd.

HAMILTON - ONTARIO

A

Xmas Greeting

to the

Canadian Trade

Through the December "Canadian Woodworker" adds a touch of good fellowship to ordinary business relations.

Forms close Dec. 10.

We will gladly prepare special illustrated greeting copy. Write today.

Where are values to-day?

The insurance of your property is a matter of grave importance. It can be made on an economical, safe basis —if you have a Canadian Appraisal —or it can be the reverse, if you use book values, old appraisals, or an estimate of present worth.

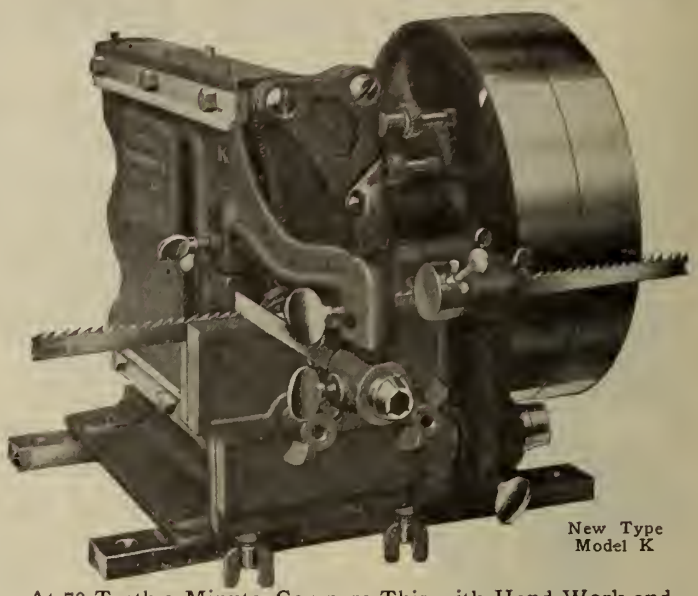
Insurance protects values, not property. If you don't know exactly what those values are now, there is no possible means of insuring them safely or economically. This is a service in which we are eminently fitted to serve you.

The Canadian Appraisal Co.
Limited

364 University St., MONTREAL

TORONTO Royal Bank Bldg. **NEW YORK** Equitable Bldg.

ONE OPERATION COSTING 5 CENTS AUTOMATICALLY FILES AND SETS THE BAND SAW



New Type Model K

At 70 Teeth a Minute, Compare This with Hand Work and

FIGURE THE SAVING

In use by over 400 Furniture Factories and by over 65% of the Automobile plants. Four of the largest saw-makers each have from 5 to 15 in their plants.

Write for Details

THE WARDWELL MFG. CO.

120 Hamilton Ave. Makers of a full line of Saw Sharpening Machinery Cleveland, O.

Don't Overlook This List

It contains the finest collection of Woodworking Machinery we have ever been able to offer. It is located at Brantford in the plant of the Brantford Piano Case Co., Ltd. During this month only, rather than move it to our Toronto warehouse we are offering this equipment at real Bargain prices. Better decide to meet us at Brantford to-day—Telephone Mr. Robert Ker, Brantford, 442.

36" Hanchett Knife Grinder.
36" American Band Saw, wood rims.
Beach Scroll Saw, with laminated wooden table.
No. 1 American Horizontal Single Spindle Boring Machine.
Bench band saw Brazing Filing and Setting Machine.
No. 2¼ American 2 Spindle Shaper, babbitt bearings, special counter shaft.
Double End Bench Emery Grinder, and c/s.
American 20" Wood Lathe, 10' wooden shears.
No. 2½ American Single End Tenoner, without copes or cut-off saw.
No. 3 American double Cut-off saw with power adjustable tables.
Three American Perfection type 16" Jointers, 3 point bearing.
No. 10 American Variety Saw Bench, tilting top.
American Post Borer.
Perrin Hydraulic Veneer Press, 6' long, 36" between uprights.
32" Glue Spreader.
American Hand Feed Rip Saw. Iron Frame and Table.
36" American No. 4½, Cabinet Planer, sectional rolls.
30" American Self Feed Jointer, with sectional feed rolls.
No. 22, 10" 4-side American Moulder, Heavy Duty
Diehl Glue Spreader Jointer.
Ballantine Self-Feed Rip Saw.
Single Arm Swing Saw with Table and Robinson Gauge.
Preston Veneer Taping Machine.
C.M.C. single-spindle, ballbearing shaper No. 803.
Glue Spreader.
Three Wysong and Miles type Belt Sanders.
Diehl Edge Sander.
Furniture Clamp Portable.
31" Yates Endless Bed 3-drum Sander 431.

The A. R. Williams Machinery Co., Limited

Established 1878

64-66 Front St. W., Toronto **Phone Adel. 0020**

If it's Machinery—Write "Williams"

P · A · X

Private Automatic Exchange

RELIABLE

The Automatic Telephone

No misunderstanding through messengers—the dial will do your bidding.

A great business needs a quick, accurate means of communication between departmental executives, far away shipping room, engineers, chemists, etc.

Such is the P.A.X.—as necessary to the operation of your plant as electric power.

"A Pair of Wires and a Dial", telling of P.A.X. in operation is yours for the asking. Write our nearest House.

Northern Electric Company
LIMITED

MONTREAL	TORONTO	WINDSOR	CALGARY
HALIFAX	HAMILTON	WINNIPEG	EDMONTON
QUEBEC	LONDON	REGINA	VANCOUVER

"Makers of the Nation's Telephones"

MANUFACTURING
Manual Telephones
Automatic Telephones
Wires & Cables
Fire Alarm Systems
Radio Sending and Receiving Equipment

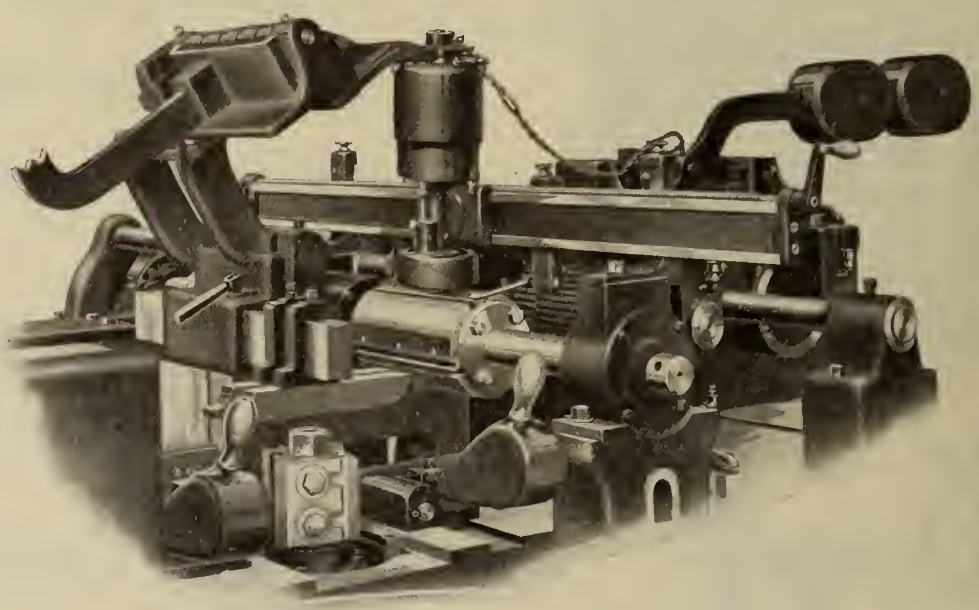
DISTRIBUTING
Construction Material
Illuminating Material
Power Apparatus
Household Appliances
Electrical Supplies
Power & Light Plants
Marine Fittings

"We Expected Good Work We Are Not In The

Thus writes Gibbard of Napanee

PRESTON HIGH SPEED

"The best Canadian machine that is on the market."
Geo Rathbone Ltd.



Grinding knives in head saves considerable time and ensures smooth cutting at fast feeds.

The Preston Heavy High Speed Ball Bearing Moulder is a machine that is selling strictly on its merits. With this moulder, you can turn out more work at higher speeds and obtain a smoother finish than with ordinary types. Further, it is so designed that all parts are readily accessible, resulting in rapid adjustments and quick set-ups. The smoothness of the finish materially decreases the cost of subsequent sanding operations. It also wins instant favor where the stock is sold just as it leaves the machine, unsanded.

We will gladly demonstrate this moulder on your own line of work

See your last month's Woodworker for complete cuts and

The Preston Woodworking

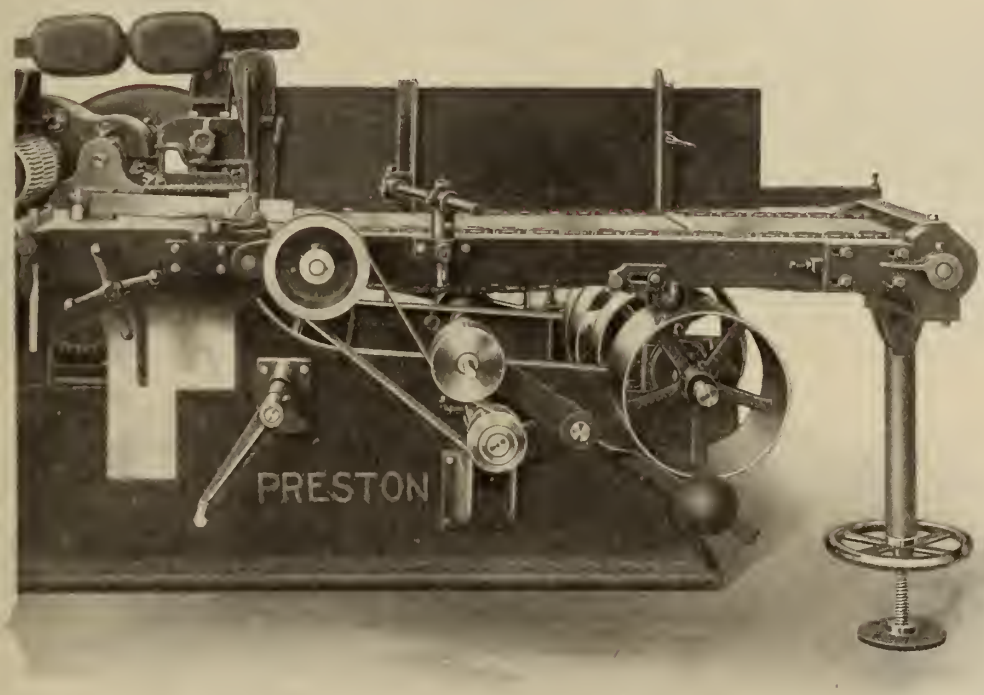
PRESTON,

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

From This Machine---And Least Disappointed"

with regard to the new

BALL BEARING MOULDER



"One of our best customers asked us to try and let him have all his mouldings run on this machine."
Jno. B. Smith & Son.

Showing view of feed end with hopper attached. This device enables short material to be fed through on fast feeds, resulting in an increase of 25% in output.

Rigidity and freedom from vibration have been secured in this moulder by obtaining a proper distribution of weight. This result is further accentuated by the extra weight built into the machine. Coupled with specially designed ball bearings on all spindles, this feature makes possible an unusually high quality of output while working at high rates of speed.

Further particulars are yours for the asking.
No obligation attached. Write us today.

description of this Ball Bearing Moulder of ours, pages 5 to 10

Machinery Company, Ltd.

ONTARIO

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

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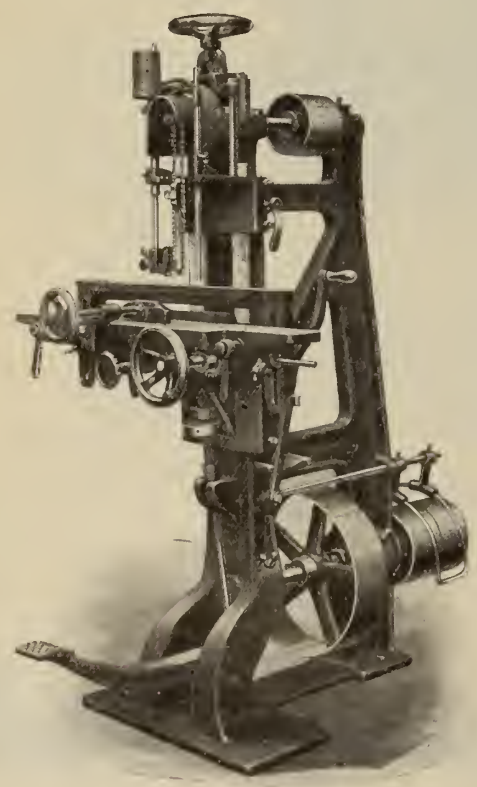

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With Compound Table

Quick (8,000 to 10,000 Mortises per day) Accurate.

No Boring, No Core Cleaning, No Splitting, No Shock, No Jar.

Cuts Mortises ¼" to ⅝" x 1½" to 2½" long, up to 4½" deep at one cut.

The price is low. The quality high.

The most economical to own and use.

WE ALSO MAKE LARGER SIZES

Cowan & Company of Galt Limited

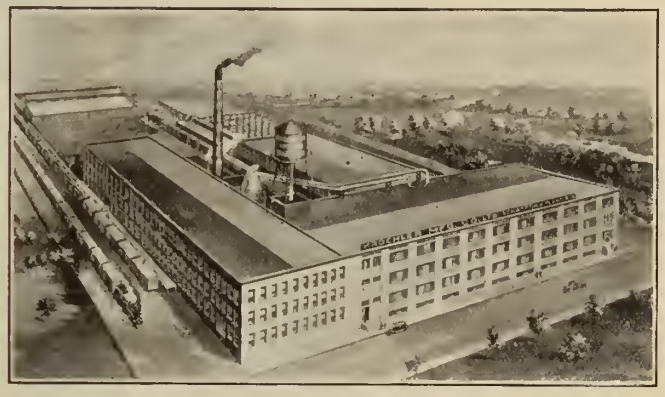
Galt, Ontario, Canada

"The Pioneer and Always the Leading Canadian Builders of Woodworking Machinery"

The Naperville Plant

The Kankakee Plant

The Binghampton Plant



The Stratford Plant

The GRAND RAPIDS VAPOR KILN

The name Kroehler is immediately identified with the Davenport Bed, a furnishing which has a national reputation of merit. It is only natural that an establishment such as the Kroehler Manufacturing Co. should seek every means to perfect its nationally advertised and nationally accepted product.

Ten Grand Rapids Vapor Kilns were installed in the Binghamton plant in 1912, 1914 and 1919.

Twelve Grand Rapid Vapor Kilns were installed in the Kankakee plant in 1910, 1913, 1919 and 1920.

Eight Grand Rapids Vapor Kilns were installed in the Naperville plant in 1911, 1912, 1913 and 1918.

Four Grand Rapid Vapor Kilns were installed in the Stratford, Ontario plant in 1916, 1919 and 1920.

In addition to this, these plants have large green storage facilities necessitating full equipment. All plants possess full sets of Grand Rapids Vapor Kiln instruments.

The story of the Kroehler Manufacturing Co. can be duplicated many times. If you have not been advised as to the principles of the Grand Rapids Vapor Kiln in the proper curing of lumber it will pay you to investigate and have our engineers call, which can be done without incurring an obligation.

Let us send you our series of technical bulletins, covering practically every phase of wood curing problems—your problems.

GRAND RAPIDS VAPOR KILN

Engineers—Manufacturers—Contractors

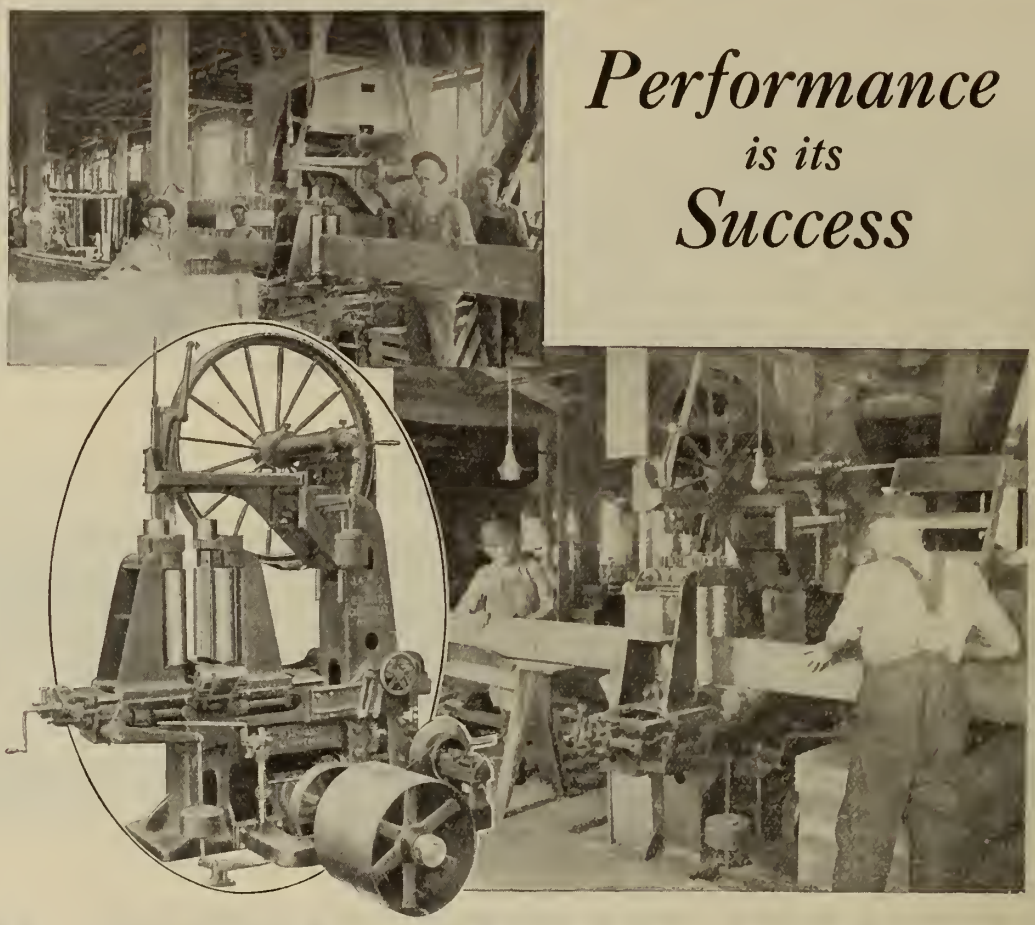
Main Office and Factory: GRAND RAPIDS, MICH.

Represented on the Pacific Coast by E. F. Tindolph, 5539 White-Henry-Stuart Bldg., Seattle, Wash.

A. R. Wiliams Machinery Co.
St. John, N. B.

The Oliver Machinery Co.
Manchester, England

Hampe & Hartwig
Hamburg, Germany



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Success

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Band Resaw - - - -

A medium size resaw with an extremely wide range. With BALL BEARINGS (Self-Aligning) mounted in upper and lower wheel shafts, wheels run perfectly true at all times. No bearing adjustment necessary.

Our Patented Knife Edge Straining Device permits the use of thin blades at high speeds without danger of breaking.

Resaws 28″ wide, 20″ thick, and to centre of 16″. Variable Friction Feed Works—Mechanism for Tipping Feed Rolls—Wheels 50″ Diameter.

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ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

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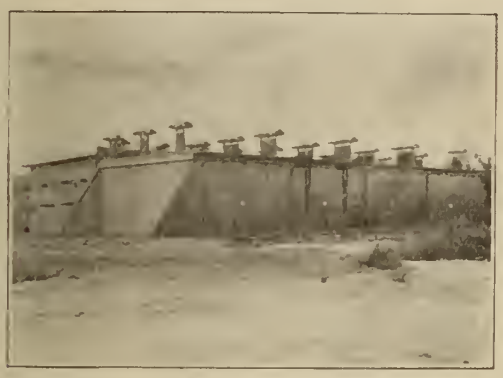
Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.
Branches: Montreal, St. John, N. B., Winnipeg, Vancouver

We are Drying 6/4 Maple with Moisture Content of 20-27% to 5-7% in 6 Days



Four National Moistat Kilns at Plant of Ward Brothers, Big Rapids, Michigan

Runs like the one quoted on the right are all in the day's work for the **Moistat**. Almost every mail brings in reports of how the **Moistat** is saving thirty per cent for one plant, forty for another and fifty for still another and is turning out better quality stock than by former slow methods. The day of **rapid, safe** drying is an accomplished fact. We shall be glad to mail you reports from numerous plants expressing opinion and detailing runs on various kinds of stock with the **Moistat**, also complete **Moistat** literature. Please write to-day.

WARD BROTHERS, manufacturers and exporters of Michigan Maple products have four National **Moistat** Kilns at their Big Rapids, Michigan, plant. We quote this excerpt from their letter to us of October 18th:

"We are kiln drying almost entirely 6/4 Elm and Hard Maple, and our records disclose that we are drying the Elm from a moisture content of 20-25% down to a moisture content of 5-7% in four days' time. We are drying the Maple from a moisture content of 20-27% to a moisture content of 5-7% in six days' time. This is being done **without any checking** of the lumber—**none whatever**—and its condition in other respects is very excellent. We are having no trouble whatsoever with any portion of the equipment such as might come from improper operation of the MOISTATS. They have been entirely reliable in their workings thus far and have kept in good condition, and we can see no reason why they should not continue doing likewise."

THE NATIONAL DRY KILN CO., 1117 E. Maryland St., Indianapolis, Ind.

Branches: Memphis, Tennessee; Albany, New York

NATIONAL DRY KILNS

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Cutler Double Service Kilns dry faster because they circulate three times the air used in other kilns

Compare the drying times given below with yours:

"Better Drying in Half the Time"

4/4 oak 6 days—4/4 gum 4 days—4/4 basswood 2 days—4/4 ash 4 days—4/4 mahogany 3 days—4/4 maple 4 days—4/4 birch 4 days—4/4 chestnut 4 days.

High speed circulation blower kilns have definitely demonstrated their superiority in all fields of lumber drying.

In Cutler Kilns circulation is carried to its practical extreme. No wonder they save their cost in a year.

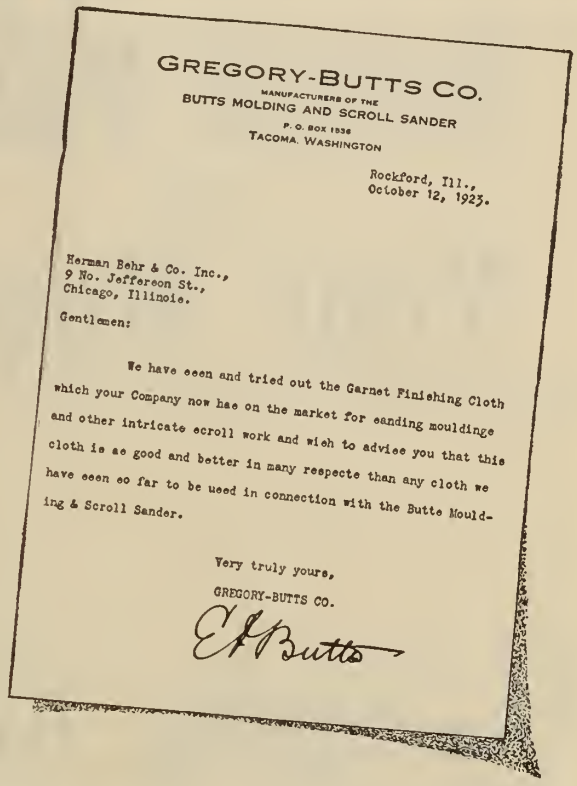
Different lumbers require different structures—There is a Cutler Kiln for every kind.

Cutler Desk Company, Dept. B. - Buffalo, N. Y.

Why Behr's OPENKOTE Was Chosen

The Butts Molding and Scroll Sander—one of the latest improvements in Woodworking Machinery—requires an exceptionally flexible and sturdy abrasive cloth.

In competition with other brands, Behr's Openkote Garnet Finishing Cloth was selected because it is "as good and better in many respects than any other cloth."



GREGORY-BUTTS CO.
MANUFACTURERS OF THE
BUTTS MOLDING AND SCROLL SANDER
P. O. BOX 1936
TACOMA, WASHINGTON

Rockford, Ill.,
October 12, 1923.

Herman Behr & Co. Inc.,
9 No. Jefferson St.,
Chicago, Illinois.

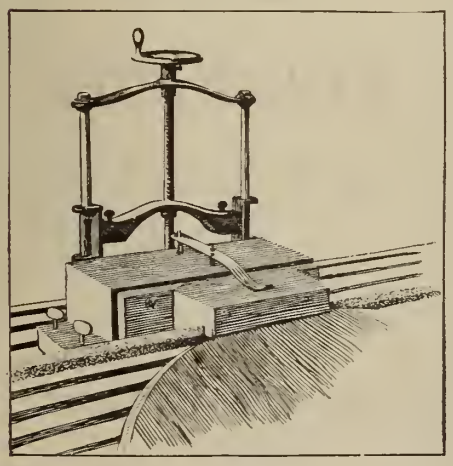
Gentlemen:

We have seen and tried out the Garnet Finishing Cloth which your Company now has on the market for sanding mouldings and other intricate scroll work and wish to advise you that this cloth is as good and better in many respects than any cloth we have seen so far to be used in connection with the Butts Moulding & Scroll Sander.

Very truly yours,
GREGORY-BUTTS CO.
E. H. Butts

Wherever the unusually difficult job must be done well, the ability of Openkote Garnet Finishing Cloth is unquestioned. It is strong enough to withstand the terrific speed of 3500 lineal feet per minute—a speed demanding a stout cloth backing with abrasive grits free to cut at all times; yet having a delicate flexibility that is exceptional.

Openkote conforms easily to the many varied and intricate molding designs because it has all the flexibility that can be put into an abrasive cloth. It has but a single layer of keen edged Garnet grains, unhindered by an excess of glue. Every kernel is on the same perfect level, cutting uniformly, with the same pressure and all at the same time.



The Butts Molding Sander sanding molded edge of round table top

Due to their size and shallowness the wide "valleys" or spaces between grains in Openkote are less apt to fill up with dust or shavings. Openkote possesses every quality that is vitally necessary for good work on all intricate operations, because it *lasts longer* and cuts *faster* and *cleaner* than any other.

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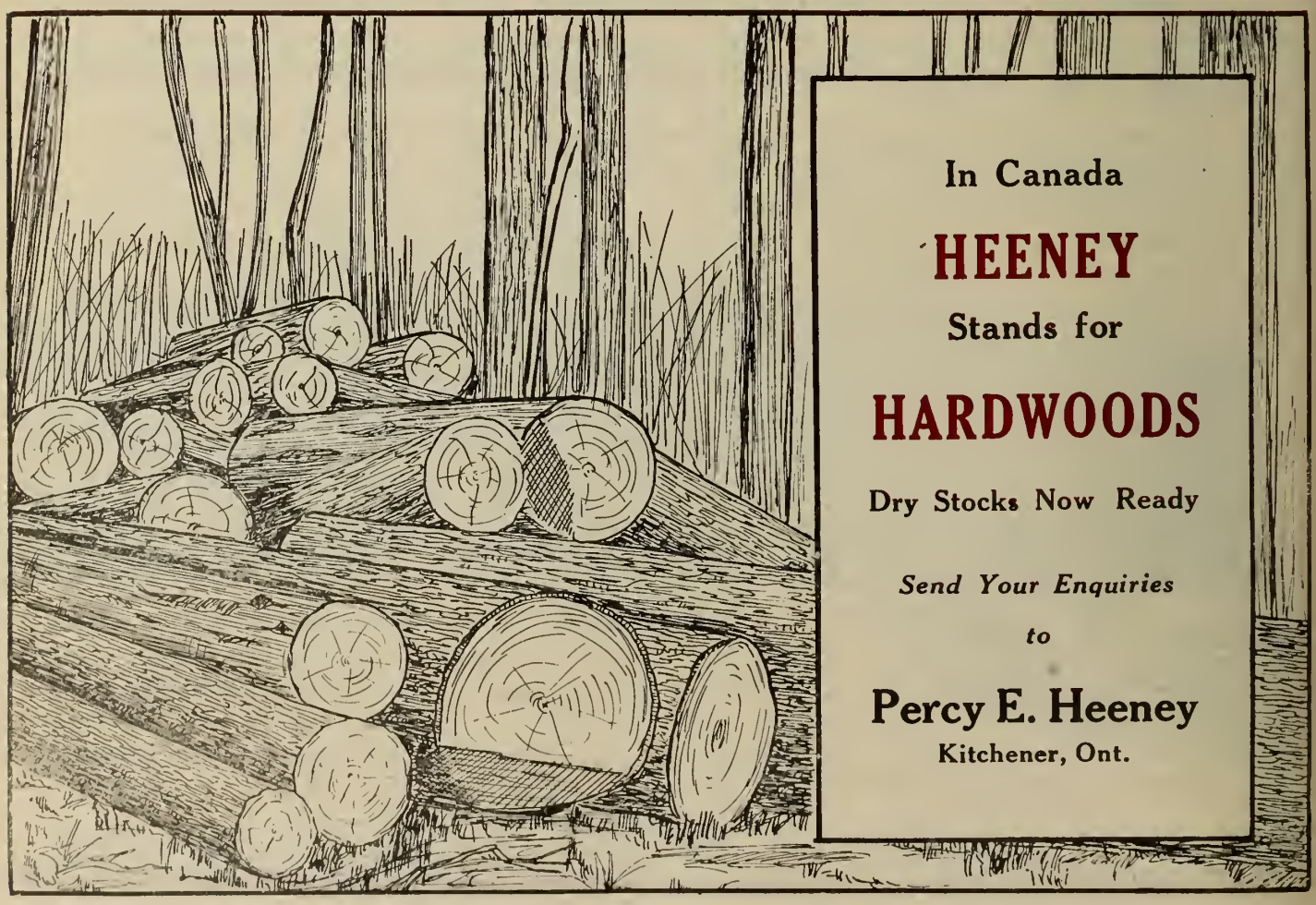
PEDWELL Since 1883 Service to Hardwood Users

The PEDWELL HARDWOOD LUMBER CO.

Office and Yard: Foot of Spadina Ave. - - TORONTO



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Send Your Enquiries

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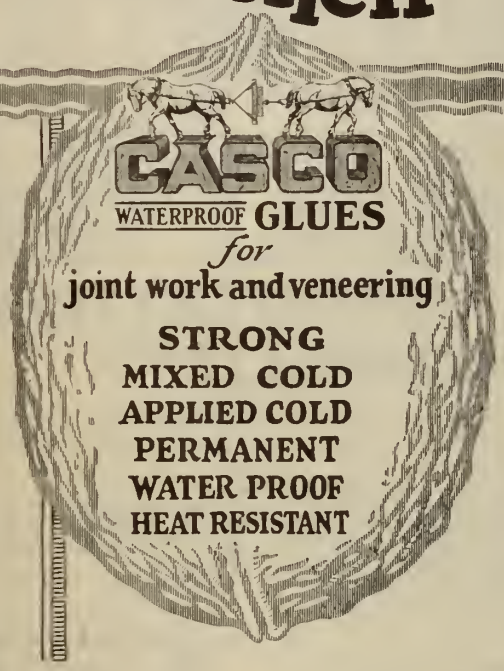

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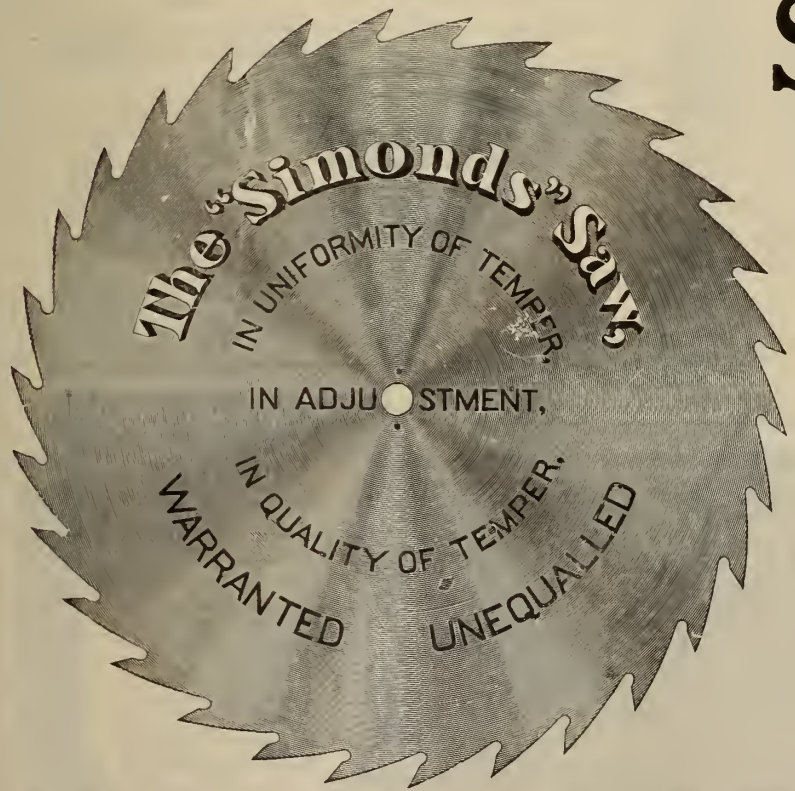
Humidigraph

The STANDARD Dry Kiln Co.

1542 McCarty St., Indianapolis, Ind.



SIMONDS
Circular Saws

It's the STEEL and CAREFUL attention to DETAILS in the manufacture that makes Simonds Saws so popular with woodworkers, millmen, or where ever efficient cutting is a requirement.

The edge-holding qualities of Simonds Circular Saws have for years been recognized in the lumber industry.

A machine equipped with a Simonds Saw pays its way.

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St .John, N.B. Montreal, Que. Vancouver, B.C.

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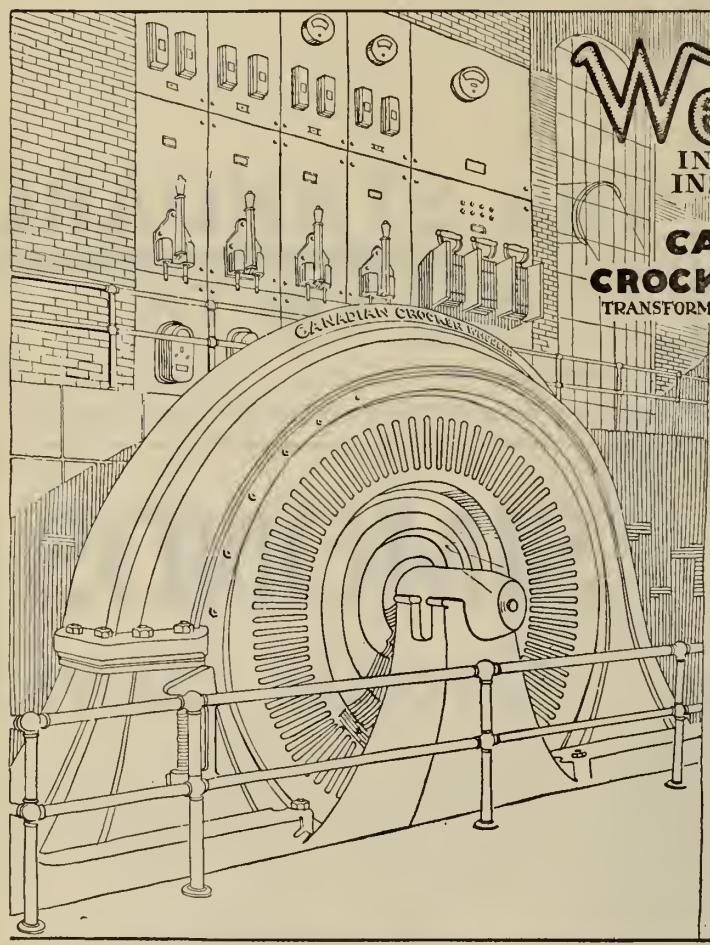
OF ESTABLISHED REPUTATION AND DEPENDABILITY



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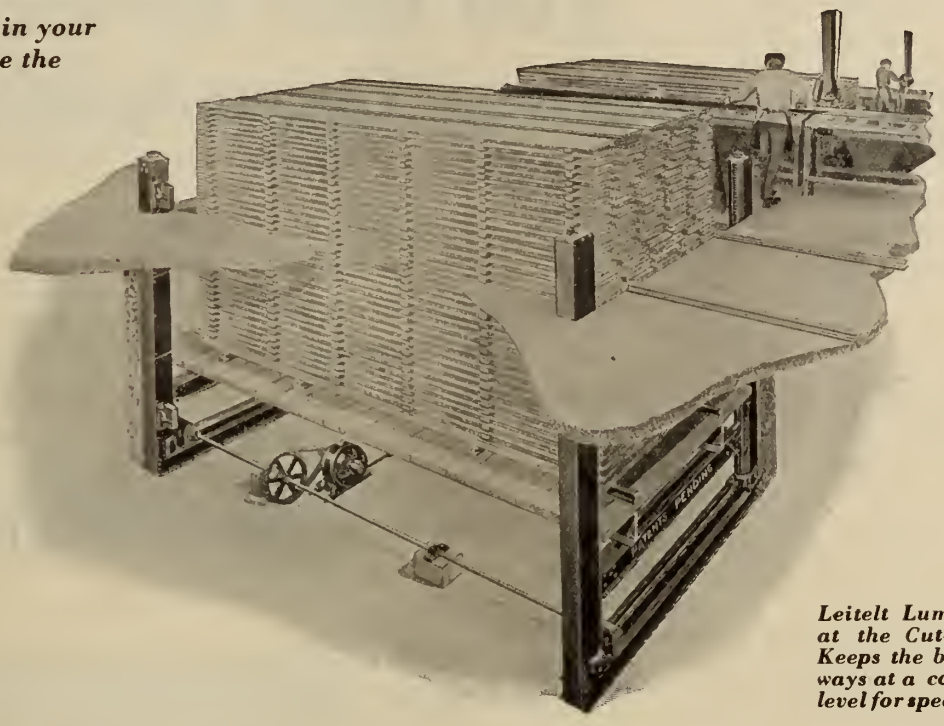
LEITELT LUMBER LIFTS

The vital spot in your factory is where the raw material enters



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Here Are Results from Scores of Plants

Leitelt Lumber Lift Installed at	Production % Increase	Labor Saved
Double Surfacers	40 to 75	1 to 2 Men
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If you are after Increased Production and Labor Savings, INVESTIGATE.

CHALLENGE US to show you, without obligation, how these savings can be duplicated in YOUR plant.

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COLUMN CLAMP

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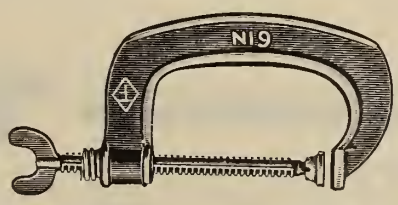

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Made entirely of malleable iron. Opens 6 inches, depth 3 inches. The swivel end stem screw has a divided rib thread which slides through a short collar screw to any desired length before tightening down. Any person using a clamp will appreciate this feature for it is a time saver.

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Carried in our Toronto Yard available for immediate shipment to out-of-town customers, ample stocks of the following:

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CHESTNUT	4/4 to 8/4	BEECH	4/4
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Stock panels ¼" 3-ply and ⅜" 5-ply in Walnut, Mahogany, Qtrd. White Oak, Plain Red Oak, Birch, Figured Red Gum, Good 1 Side, and Good 2 Sides, in sizes 20" x 60", 24" x 60", 30" x 60", 24" x 72", 30" x 72", 36" x 72".

Office, Yard, and Warehouse, 29-49 Atlantic Ave., G. T. R., TORONTO. Phone Lake 1953
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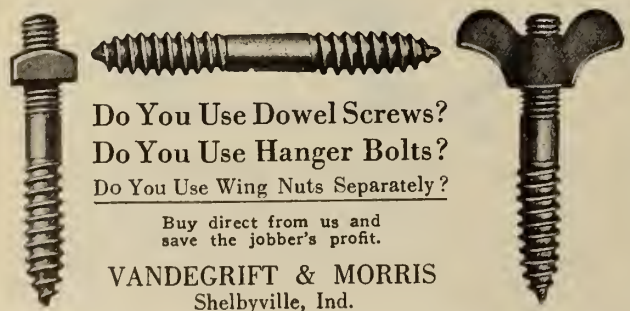

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Twelve million feet per year is the capacity of OTIS mills. An adequate supply is always on hand for prompt shipment. Get our prices.

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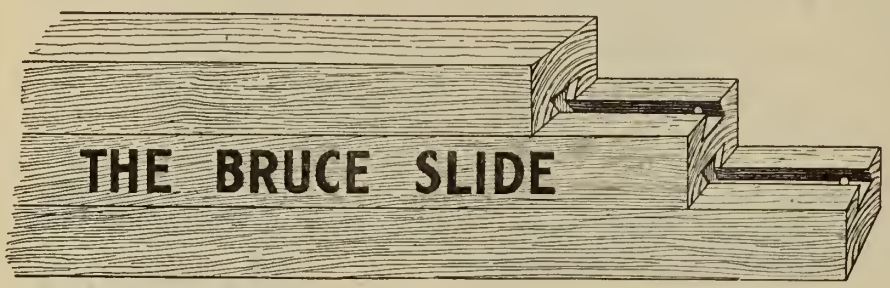
Chicago Office: Room 208, 128 N. Wells Street

TABLE SLIDES TABLE RIMS TABLE PINS



Makers of—

The "Bruce Slide"

BRUCE WOODWORKERS, Limited, Chesley, Ont.

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo.

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Ply Wood Panels

3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

OAK

Plain and Quartered, Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

Oak Timbers and Planking

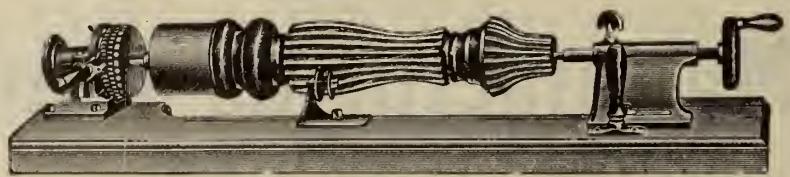
THE MOWBRAY & ROBINSON LUMBER CO.

Office: CINCINNATI, OHIO

Canadian Representative:
A. K. Johnson, Bank of Hamilton Bldg., Toronto, Ont.

FLUTING HEADS

Shaper Attachment



For fluting Table Legs, Chair Legs, Bed Posts, Columns, Balusters, etc. Swings any diameter up to 8" and may be extended to any length. Spaces automatically number 1 to 48. Ask for circulars of Fluting Heads, Twist Machine and Twist Sander.

THE SHAWVER CO., SPRINGFIELD, O.

Canadian Representative:
The A. R. Williams Machinery Co., 64-66 Front St. West, Toronto

From Missouri?

WALNUT WALNUT WALNUT

We will not tire you with a long article on the merits of our Veneers.

All Ads read just about alike—stressing **sourse of supply, quality of product, complete stocks, prompt shipments, c o u r t e s y of service, etc.**

We, too, could say all that and then some, but we won't.

Talk's cheap. We've got the goods.

STUMPS

BACK CUT

HALF-ROUND

ROTARY

SLICED

Let Us Show You

GEO. W. HARTZELL, PIQUA, O.

WALNUT SPECIALISTS

A Permanent Lumber Service

AFTER several years of inactivity we are now cutting on our modern fully equipped mills at Manistique and Little Lake, Upper Michigan. The timber behind these mills was purchased many years ago by the Stack interests from the then "unlimited" supply. Its quality, particularly the maple and birch, is the envy of northern mill men among whom this tract is famous.

This timber will run the mills to full capacity for fifteen to twenty years. The 40,000,000 feet annual cut will run:

15,000,000 ft. maple annually
6.000,000 ft. birch annually
2,500,000 ft. beech annually
2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually
the balace in Spruce and Tamarack.

Our exceptional service, grades, and manufacture will be maintained. "Low freight rate shipments by water to Toronto, Montreal, Owen Sound, Port Arthur, and other Great Lakes and St. Lawrence River Ports. Conveniently located also for rail shipments to inland points by the C.P.R. or Soo line."

We will be pleased to hear from old friends and from new ones who can understand and appreciate what permanent connection with such a source of supply would mean.

STACK LUMBER CO.

ESCANABA MICHIGAN

Southern Hardwoods

MISSISSIPPI DELTA GUM

The Best That Grows

OUR mills are producing some beautiful stock at the present time, and we can assure prompt delivery in any quantity.

Plain and Quartered Red and Sap Gum, Plain and Quartered White Oak, Plain Red Oak, Cottonwood, Cypress, Ash, Elm.

MISSISSIPPI VALLEY HARDWOOD CO., INC.

Bandmills: Memphis, Tenn., Clarksdale, Miss.
Sales Office: Memphis, Tenn.

MISSISSIPPI DELTA GUM The Best That Grows

OAK
ASH GUM ELM
MAGNOLIA SYCAMORE
COTTONWOOD

We carry a full line of Southern Hardwoods ready for immediate shipment. All stocks are well manufactured and priced right.

Write or wire for prices.

SOUTH TEXAS LUMBER COMPANY

MANUFACTURERS OF HARDWOODS AND SOUTHERN PINE

General Sales Office: Houston, Texas Band Mills: Onalaska, Milvid, Connell, Dayton, Cleveland, and Fuqua

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

Memphis - Tenn.

We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark., Floyd, La.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK:
- 3 cars 4/4" Fas
- 1 " 5/4" Fas
- 5 " 4/4" No. 1 Common
- 1 " 4/4" No. 2 Common

PLAIN WHITE OAK:
- 5 cars 4/4" Fas
- 2 " 5/4" No. 1 Com. & Btr.
- 10 " 4/4" No. 1 Com. & Sel.
- 7 " 4/4" No. 2 Common

PLAIN RED OAK:
- 6 cars 4/4" Fas
- 3 " 5/4" Fas
- 3 " 6/4" Fas
- 1 " 8/4" Fas
- 8 " 4/4" No. 1 Common
- 10 " 5/4" No. 1 Common
- 2 " 6/4" No. 1 Common

QUARTERED RED GUM:
- 5 cars 4/4" Fas
- 4 " 4/4" Fas. Fig.
- 6 " 5/4" Fas
- 7 " 6/4" Fas
- 10 " 4/4" No. 1 Common
- 10 " 5 4" No. 1 Common
- 10 " 6/4" No. 1 Common
- 10 " 8/4" No. 1 Common

QUARTERED RED GUM S.N.D.:
- 5 cars 5/4" No. 1 Com. & Btr.
- 5 " 6/4" No. 1 Com. & Btr.
- 10 " 8/4" No. 1 Com. & Btr.

ASH:
- 4 cars 10/4" No. 1 Com. & Btr.
- 2 " 12/4" No. 1 Com. & Btr.
- 2 " 4/4" No. 1 Common
- 2 " 4/4" No. 2 Common

SAP GUM:
- 8 cars 4/4" Fas
- 3 " 5/4" Fas
- 3 " 6/4" Fas
- 15 " 4/4" No. 1 Common
- 8 " 4/4" No. 2 Common
- 5 " 5/4" No. 1 Common
- 5 " 6/4" No. 1 Common

COTTONWOOD:
- 2 cars 4/4" Fas
- 2 " 4/4" x 9—12" Box Bds.
- 2 " 4/4" x 13—17" Box Bds.
- 6 " 4/4" No. 1 Common
- 2 " 4/4" No. 2 Common

ELM:
- 2 cars 4/4" Log Run
- 6 " 10/4" Log Run
- 6 " 12/4" Log Run

One of Our Loaders Operating in Our Logging Road

Southern Hardwoods
and
Genuine Louisiana Red Cypress

OAK, ASH, GUM, COTTONWOOD, ETC.

GLIMPSE NUMBER ELEVEN INTO THE HARDWOOD OPERATIONS OF

E. SONDHEIMER CO.

(Cable Address—Sonderco-Memphis)

MANUFACTURERS

Band Mills:
SONDHEIMER, TALLULAH
ALEXANDRIA, LA.

Office and Distributing Yard:
MEMPHIS, TENN.
Chelsea and McLean Avenues

KIRBY-LUMBER COMPANY

HOUSTON - TEXAS

Manufacturers ***Exporters***

SOUTHERN HARDWOODS

Over One Billion Feet of Hardwood Timber

— *Our Specialties* —

Soft Textured Neches Valley Red Gum
Steam Cured Bright Sap Gum

"KIRBY FOR QUALITY IN QUANTITY"

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	42,000	10,500	171,000	175,000
1¼ in.	27,000	.....	10,000	19,000
1½ in.	28,200	100	23,000	96,000
2 in.	3,000	.....	9,000	68,000
2½ in.	4,500	.....	4,300	3,000
3 in.	21,700	.....	4,500	4,000
4 in.	9,300	.....	900	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,600	.....	3,000	.....
1 in.	88,000	.....	168,000	138,000
1¼ in.	10,000	450	77,000	57,000
1½ in.	14,700	1,600	92,000	400
2 in.	16,000	.....	38,000	32,000
2½ in.	2,000	.....	.....	.....
3 in.	1,300	.....	.....	.....
4 in.	1,500	.....	300	.....

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
5/8 in.	14,000	7,000	15,900	3,000
¾ in.	51,000	160,000	.....	23,000
1 in.	91,000	124,000	44,200	125,000
1¼ in.	53,000	14,600	.....	.....
1½ in.	22,000	14,000	.....	1,500
2 in.	26,000	51,000	4,000	9,000
2½ in.	3,200	3,200	.....	.....
2½ in.	110,000	41,000	2,600	1,800
3 in.	42,000	26,000	300	400
3½ in.	4,500	3,600	.....	.....
4 in.	47,000	17,800	600	500

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	50,000	224,000	1,500	.....
5/8 in.	.....	53,000	21,000	2,400
1 in.	76,000	64,000	18,500	75,000
1¼ in.	52,000	148,000	2,000	2,100
1½ in.	50,000	74,200	5,000	2,500
2 in.	67,000	132,000	26,000	10,000
2½ in.	1,500	1,400	.....	.....
2½ in.	96,100	34,000	.....	.....
3 in.	57,800	37,000	5,000	12,000
4 in.	30,600	14,600	.....	.....

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	.....	.....	4,700	500
1 in.	7,200	6,400	11,000	1,400
1¼ in.	6,900	.....	7,900	.....
1½ in.	400	.....	4,000	.....
2 in.	.....	.....	7,400	.....

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	.....	.....	.....
¾ in.	3,900	.....	2,300	3,000
5/8 in.	.....	.....	400	800
1 in.	80,000	400	25,000	3,700
1¼ in.	19,000	27,300	73,000	5,800
1½ in.	18,000	500	25,500	200
2 in.	.....	.....	22,000	5,700
2½ in.	2,000	.....	300	.....
3 in.	4,000	.....	1,200	.....
4 in.	5,600	.....	900	200

TENNESSEE SCENTED CEDAR

1 in.—40,000
1¼ in.— 1,500

PLAIN RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	99,000	158,000	16,200	5,870
1¼ in.	21,000	36,000	2,700	800
1½ in.	15,000	50,000	15,500	....
2 in.	5,000	34,000	15,000	10,000
10/4	.....	1,500	600	600

QUARTERED SAP GUM

	1 & 2	No. 1C	No. 2C
4/4	.....	1,800	.....
5/4	.....	9,000	.....
8/4	.....	18,000	800 .....
10/4	.....	15,000	14,300 .....
12/4	.....	300	 300

POPLAR

	1 & 2 18" up	1 & 2	No. 1 Com.	Bright Saps
¾ in.	.....	4,000	2,700	.....
5/8 in.	1,000	48,000	12,100	67,900
1 in.	1,000	55,000	36,000	19,700
1¼ in.	2,300	10,000	89,000	23,000
1½ in.	4,300	3,000	3,000	29,000
2 in.	.....	10,300	5,000	78,800
2½ in.	.....	5,000	.....	11,800
3 in.	.....	2,600	8,000	19,000
4 in.	.....	3,000	6,500	9,200

Also Large Stocks of Ash, Basswood, Beech, Birch, Hard and Soft Maple.

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

T. SULLIVAN & COMPANY
NORTHERN
Gray Elm and Maple
Niagara Street Corner Arthur

BUFFALO *"Buy and Sell Hardwood in this Market."*
FAMOUS LUMBER CENTER
Unequalled facilities for rapid dispatch, by Rail, Lake or Barge Canal, on all your requirements, large or small.
SUPPLYING THE HARDWOOD NEEDS OF THE NATION

MILLER, STURM & MILLER
Hardwoods of All Kinds
1142 Seneca Street

FRANK T. SULLIVAN
Specialties
Cherry, Walnut and Pacific Coast Woods
Main Office: 600 Ellicott Square. Yard: 2598 Delaware Ave.

Taylor & Crate **Hardwoods of All Kinds**
A stock of 18,000,000 to 20,000,000 ft. of Hardwoods carried at all times at our big Buffalo yards.
RAIL AND CARGO SHIPMENTS
Established 56 Years
2101 Elmwood Avenue

STANDARD HARDWOOD LUMBER CO.
Hardwoods
Prompt Shipments—from Buffalo Yards or from Mill direct to you
8,000,000 feet Dry Stock on Hand. 1333 Clinton Street

Buffalo Hardwood Lumber Co. J. B. Wall, Pres't; M. M. Wall, Treas.; T. H. Wall, V-Pres't.
940 Seneca Street
We specialize in—WHITE ASH, OAK AND MAPLE

HUGH McLEAN LUMBER CO.
HARDWOODS OF ALL KINDS
Our Specialties—Quartered White Oak, Plain and Quartered Gum
940 Elk Street

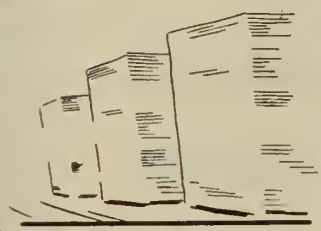
ATLANTIC LUMBER COMPANY
HARDWOODS
Our Specialty—West Virginia and Pennsylvania Cherry
West Virginia Soft Red and White Oak. 1055 Seneca Street

BLAKESLEE, PERRIN & DARLING
A complete stock of seasoned Hardwoods
Including Ash, Basswood, Birch, Cherry, Chestnut, Cypress, Elm, Gum, Hickory, Maple, Plain and Quartered Oak, Poplar and Walnut.
1100 Seneca Street

1" to 4 No. 1" Common and 1s & 2s **HARD MAPLE**
Excellent widths and lengths.
Can kiln dry and surface.
G. Elias & Bro., Inc. Elk Street to the Buffalo River **Buffalo, N. Y.**

YEAGER LUMBER CO., INC.
Our Specialities
Oak Poplar Ash Maple
932 Elk Street

When You Want GOOD Walnut



Say IOWA Walnut

and Get the Best

Des Moines Saw Mill Company
1024 Murphy St., Des Moines, Iowa

When In Need Of Southern Hardwoods

OAK
CYPRESS
GUM
ETC.

Any Grade
Any Quantity

Write or Wire

Thurn-Maxson Lumber Co.
SOUTH BEND, INDIANA

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

A Pleasant Service
is
to demonstrate to our patrons the value of our
MIDLAND WHITE PINE
Practically all Grades Rough or Dressed
CANADIAN FOREST PRODUCTS

TERRY-NICHOLSON-CATES
LIMITED
SUCCESSORS TO
Terry & Gordon, LIMITED

Montreal TORONTO Vancouver
Ontario Representatives for
The British Columbia Mills, Timber and Trading Co. Ltd., Vancouver, B.C.

STARK
The LAST WORD *in* QUALITY & SERVICE
BRAND

HARDWOODS
Oak, Ash, Gum, Poplar, Maple, Elm, Cottonwood, Sycamore.

CYPRESS
Lath, Lumber, Dimension.

VENEERS
Door Panel, Piano Rim, Cypress Battery Stock.

OAK FLOORING
"Chickasaw Brand"

There's More Than A Mere Name Here

All the energy, resources, reputation and ability we possess are behind every foot of forest products passing through our band mills, veneer plant, dry kilns and planing mill. That is why we are willing to stencil Stark-Brand on everything we produce and that is also why this trade-mark is such an infallible index of sound values to buyers everywhere of

Southern Hardwoods - Cypress
Sawn Veneers - Oak Flooring

Stark-Brand carries with it a guarantee of prompt shipment, in straight or mixed cars, of any item in the accompanying panel and also a pledge that our expert traffic department will help you solve your transportation problems. Order today and enjoy the experience of buying real satisfaction while buying your lumber, veneer and flooring requirements.

James E. Stark & Company, Inc.
Memphis Veneer & Lumber Co.
MANUFACTURERS
General Offices MEMPHIS, TENNESSEE
Chicago Offices 25 N. DEARBORN ST.

THIS MARK

on veneer samples and crates
is your best assurance of

UNIFORM QUALITY
SMOOTH CUTTING
THOROUGH DRYING
AND
HONEST SAMPLING
PRICING and DEALING

for more than half a century the
reputation earned and enjoyed by

OVER FIFTY MILLION FEET ANNUALLY

WILLIAMSON VENEER

THESE DISTINGUISHING MARKS ON ALL SAMPLES AND CRATES

THE WILLIAMSON VENEER COMPANY

CHICAGO JAMESTOWN BALTIMORE HIGH POINT NEW YORK

Economy as well as unsurpassed elegance is afforded by the use of Ritter Appalachian Oak for general manufacturing purposes.

Uniformity of Color

Color, like grain, adds to or detracts from the beauty of wood. Hence, the uniform color of Ritter Appalachian Oak is a distinction which manufacturers of refined products appreciate as a most desirable quality.

Ritter White Oak is produced from but two species, one of which comprises 85 percent of our total White Oak cut. The Red Oak is sawed from but three species, which in this instance, are so similar in color as to lose their identity to the average consumer. The result is that Ritter Oak is more nearly uniform in color than that cut outside the Appalachian Region.

The advantages, then, in the use of Ritter Appalacian Oak are obvious. Its use means increased beauty and desirability of the finished product, as well as decreased production costs, due to the economy in the manufacture and finishing of the product. This is a further reason for the superiority of Ritter Appalachian Oak for general manufacturing purposes.

For full particulars consult our representative or write us.

W. M. RITTER LUMBER COMPANY

America's Largest Hardwood Producer—Annual Capacity—130,000,000 Feet

115 E. Rich Street COLUMBUS, OHIO

MEMBER OF

RITTER

APPALACHIAN OAK

FURNITURE TRIMMINGS
SPECIAL STAMPINGS
SPECIAL HARDWARE

BUTTS Plain and Ball Tip
DRAWER PULLS
CORNER BRACES
TABLE TOP LOCKS
MIRROR STOPS
ETC. ETC. ETC.

Send your orders and inquiries to us and keep your money in Canada.

Larsen & Shaw Ltd.
Walkerton, Ont.

The Critical Buyer
insists upon
DUNN'S
GLUE
BECAUSE
he is assured of UNIFORMITY at all times.

Sold for nearly half a century and still
"GOING STRONG"

Working samples upon request

THOMAS W. DUNN CO.
of Canada Limited
P.O. Box 672 MONTREAL, P.Q.

From Old Kentucky
The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

Ash, Oak, Gum, Poplar, Hickory, Walnut, Chestnut, Beech, Maple, Elm, Sycamore, Cottonwood. Quotations promptly.

J. V. STIMSON & CO.
Owensboro - Kentucky
Bandmills: Owensboro; Campbellsville, Kentucky

Mercereau-Hawkins Tie Company
Huntington - W. Va.

Manufacturers and Wholesale Dealers

West Virginia and Southern
HARDWOODS

We specialize in
Oak Tie Siding
White and Red Oak
Yellow Poplar
Basswood
Chestnut and
Gum Lumber.

Canadian Sales in Charge of
C. W. PETERS
Vice President and Manager of Lumber Dept.

WHITE PINE

Good Dressing Grades

Specialize in 1 2 & 3 Cuts

Dry Hemlock Pine and Spruce

Ontario and Quebec Stock

All Dimensions

WANTED

500,000′ 1 x 4 to 8—8/16′ Jack Pine and Spruce D2S C. M. not more than 15% 5th.

500,000′ 2 x 4 8/16′ Spruce D4S —¼ Scant—not less 25% 14′, 16′ Lengths.

Ties and Piling

Also Pine, Hemlock and Spruce Lath

Prompt Shipment

THE BIG BEAR LUMBER CO.

Telephones Main 1218-1219. Suite 416 Excelsior Life Building, Toronto, Ont.

Yellow Poplar Lumber Co.

Manufacturers of Band Sawed

Poplar Plain Oak
Quartered Oak
Chestnut Basswood

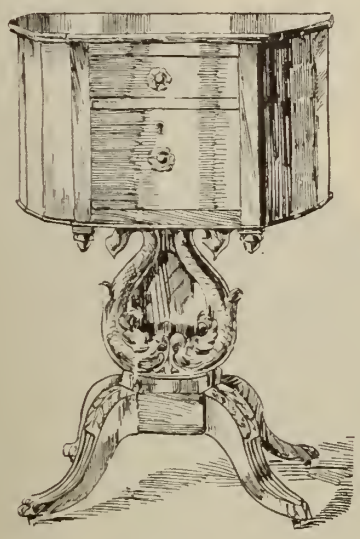
Capacity 50,000,000 per annum

SPECIALTY: Monogram Brand Oak Flooring

CANADIAN ENQUIRIES SOLICITED

Mills Coal Grove Ohio

General Offices: 33 Rector St. New York City



Walnut
—the ideal cabinet wood

Properly made walnut furniture never becomes warped, loose or rickety, because it is the most unchanging and stable of cabinet woods.

Walnut boasts moderate weight with maximum strength—an ideal combination. Likewise, it has, as no other wood, an almost endless variety of figure. It has a close grain and is easily worked into the most artistic designs.

We'll be glad to supply your requirements.

Leland G. Banning

Cincinnati - Ohio

Canadian Representatives: A.E. Klippert, 11 Laxton Ave., Toronto, Ont.

SPECIAL SERVICE FOR PARTICULAR BUYERS

"We maintain a stock of Northern lumber, catering to the buyer who wants one particular grade in car lots, or whose needs call for a mixture of different woods in mixed cars.

The ability to get what is needed when wanted, without the waste from lower grades, or investment in lumber of higher grade, together with our planing mill facilities, and our battery of 23 dry kilns, make our service especially desirable for factory buyers.

May we quote you on your next purchase."

KNEELAND-BIGELOW COMPANY

BAY CITY - - MICHIGAN

Let Hancock Dry Your Lumber

We can supply your needs in kiln-dried hardwood lumber, hardwood flooring, plywood and panels. We carry these in stock or can make up special requirements. We guarantee our Millwork.

T. H. HANCOCK, LTD.

1372 Bloor Street West TORONTO

Remarkable durability over long periods of years, and a surprising saving in power consumed are features of

"Canadian" Planing Mill Exhausters

Specify them when ordering exhaust systems through your contractor.

Send for catalog No. 410-13

Canadian Blower & Forge Company Limited

Kitchener - Ontario

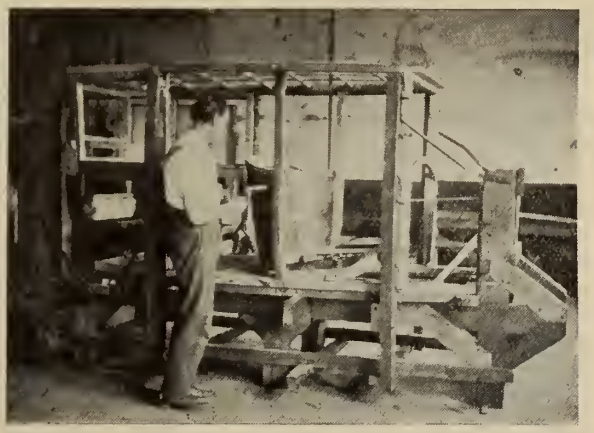
Montreal, Toronto, Winnipeg, Calgary, Vancouver, St. John

"Better Use Birch"

Automobile Builders are Turning to Birch

Many qualities are demanded of a hardwood that is to be used in automobile bodies. The wood must possess great strength and resiliency. It must machine easily, take a fine finish and resist dents and bruises. In all these things, Birch stands supreme.

Birch grows slowly; its fibres are closely knit. The wood is tough with a hard, unyielding surface. Thus, users of Birch get strength with elasticity—a very hard wood that is not brittle. Properly seasoned, Birch has no tendency to warp or twist. It is one of the easiest woods to handle and a perfect material for fine coach-work.



Birch Is Used Extensively in the Automobile Factories of Canada and the United States

—a sedan type body being built of Birch in the shops of Gray-Dort Limited, Chatham, Ont.

Anderson, Shreiner & Mawson

Colonial Bldg., 13 King St. West, Toronto

HARDWOOD LUMBER

Mills at South River Ontario

DODGE

Power Transmission Service is Taken for Granted

After we receive an order from a customer we rarely hear from him again until he is ready to place his next order. Then it comes along automatically.

There's no correspondence about delays. Promises as to delivery are fulfilled, and, of course, the quality of Dodge Power Transmission Machinery is never questioned. In brief, the reliability of Dodge Power Transmission Units has become so firmly established that it calls for no comment.

Power users expect the best in quality and service from us, and would be just as astonished as we should be ashamed if they were disappointed.

The point we particularly want to stress in this advertisement is: that an order for one small pulley or a few feet of shafting is just as welcome and as carefully looked after as a contract job.

Single pulley buyers of twenty and thirty years ago are today among our biggest accounts—we have grown and prospered together. Here's hoping we may see you develop in like manner. If you haven't one, send for our Catalogue B. 10.

DODGE MANUFACTURING CO. OF CANADA, LIMITED

Head Office and Works—Toronto
Branch Warehouse, 770 St. Paul St. West, Montreal

Distributors: Chapman Double Ball Bearings Ex Our Stock

QUARTERED WHITE OAK
15,000' 4/4" FAS
9,000' 5/4" FAS
8,000' 5/4" No. 2 Com.

PLAIN WHITE OAK
45,000' 4/4" FAS
30,000' 4/4" No 1 Com-sel
30,000' 4/4" No. 2 Com

PLAIN RED OAK
6,000' 3/4" FAS
65,000' 3/4" No. 1 Com-sel
12,000' 3/4" No. 2 Com
14,000' 4/4" FAS
90,000' 4/4" No. 1 Com-sel
60,000' 4/4" No. 2 Com
11,000' 5/4" No. 2 Com

QUARTERED RED GUM
14,000' 3/4" Com & Btr.
34,000' 4/4" FAS
90,000' 4/4" No. 1 Com-sel
74,000' 5/4" No. 1 Com-sel
75,000' 6/4" FAS
57,000' 8/4" FAS

PLAIN RED GUM
22,000' 4/4" FAS
200,000' 4/4" No. 1 Com-sel
108,000' 4/4" No. 2 Com
15,000' 5/4" FAS
75,000' 5/4" No. 1 Com-sel
70,000' 5/4" No. 2 Com
75,000' 6/4" No. 1 Com-sel
45,0000' 6/4" No. 2 Com

QUARTERED SAP GUM
10,000' 1/2" No. 2 Com-Btr
4,000' 3/4" Com-Btr
150,000' 4/4" FAS
90,000' 4/4" No. 1 Com-sel
12,000' 5/4" FAS
24,000' 6/4" No. 1 Com-sel

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New Sales Tax

A reader of the "Canadian Woodworker" recently remarked that the annual riddle of the amended sales tax is engaging the attention of business men in practically all branches of the manufacturing and wholesale trade with the retailer an interested third party. The term "Annual Riddle" is not so bad, for the additions and changes which are made to the act each year usually seem to be so ambiguous and in some details so impractical as to raise a question as to just what is meant and how the terms can be carried out. This year is no exception.

Under the amendments to the Special War Revenue Act of 1915 which go into effect January 1, 1924, a sales tax of 6 per cent. is to be paid on practically all goods manufactured in Canada and a sales tax ot the same amount on the duty paid value of imported goods. This in itself may appear to be simple enough but in order to avoid the pyramiding of the tax as different commodities and materials pass through the various channels of manufacture and distribution, an effort has been made to apply the tax only upon the final sale to consumer or retailer.

Thus a licensed manufacturer is not called upon to pay a tax on lumber and other material to be used in the manufacture of his product and then resold to a retail dealer or to the final consumer. However the tax is payable upon the total value of the product as it is sold. Thus a woodworker buying lumber to be manufactured into furniture or doors or sash, etc., would not be called upon to pay a tax upon such stock or upon other material that actually enters into the finished product. However, upon material that is consumed in the manufacture of the product, that is, upon materials that are not used in, wrought into or attached to the final product the six per cent. sales tax is payable at the time of purchase. Under this clause an article like sand-paper which does not enter into the finished article would be subject to the sales tax at the time it is purchased, but glue or finishing material would not. Further, such an item as crating lumber or the tags or twine used in packing and shipping while not entering into the finished product are attached thereto and for this reason are not subject to the sales tax at the time of purchase.

Additional complications arise in what might be termed the transition stage. For instance a manufacturer might have considerable lumber on hand on Jan. 1, 1924, upon which the present sales tax of 3½ per cent. has been paid. Under the amended act the articles into which this material enters will be subject to the sales tax of six per cent. at the time of sale. This would mean that a sales tax would have been paid twice on such material. To avoid this the tax of 3½ per cent. will be refunded upon the material thus carried over, which will enter into the finished product or be attached thereto, provided application is made in accordance with the amended terms of the act. This refund will be paid upon the total stock thus carried over as of Jan. 1, 1924, or monthly as such material goes out in the finished product. Reference to this phase of it will be found elsewhere in this issue.

Another contentious clause is that which states that "Licensed manufacturers or licensed wholesalers when selling to retailers or consumers shall not show the tax as a separate item on the invoice." This suggests that the tax is to be absorbed by the wholesalers and manufacturers rather than be passed along as a separate item as is the custom at present. This would practically entail the readjusting of existing price lists as the margin on many lines is such that the tax could not be absorbed without seriously impairing the profit on the transaction. This clause has been strenuously objected to and the advice of legal authorities is that it is Ultra Vires or beyond the power of the Minister. However, unless changed, it will likely go into effect on Jan. 1 and perhaps will be the subject of a special ruling by the department.

Some further light is thrown on the amendments to this act elsewhere in this issue.

Taking Advantage of Woodworkers

Some of the larger contractors are making a practice of dividing the woodwork on some of their big jobs and calling for separate tenders for each division or group so created. Thus in tendering on the complete woodwork for some large building the millwork manufacturer may be called upon to submit a number of separate bids covering the different classes of work.

This in itself is not a serious matter other than involving a slight amount of additional work, in fact it would work out to the advantage of all concerned were millwork manufacturers absolutely sure of their costs. Here is where the rub comes. As was brought out in the cost studies which were published in the Canadian Woodworker some time ago there are apparently very few woodworkers who know their costs or who are able to estimate with any degree of accuracy. As the low tender in each group is likely the one to be accepted those woodworkers who guessed lowest are to have their low tenders accepted but are not given a chance to even up on the job by securing other portions of the work at a fair profit, as is the case with bulk tenders. When tendering on the complete woodwork for a building it is likely that the es-

timate on some items would be too low but that this would be offset by a high estimate on other items so that perhaps on the average a slight profit would accrue. If, however, just those items on which the estimate was too low were to be ordered, there is little doubt but that a loss would be made. This is exactly what happens when the work is divided up and separate tenders called, for the contracts are likely to go to those who guessed too low.

This goes to emphasize the necessity for accurate cost knowledge and its value as a basis for estimating. If all woodworkers were absolutely sure of their figures, if they had a foundation of accurate cost data on which to work the group tender plan would seem to be preferable.

This is so because different plants are unusually well adapted to do various lines of work. In one case it may be sash and frames, in another panel work and in a third something else. If all tenders for the various classes of work were based on the costs that prevail in each plant it is likely that the sash and frames would go to the plant best equipped to handle that line, the panel work to the plant that can handle that item to the best advantage and so on down the list. Another point in favor of separate tenders is that certain departments of a plant might be extremely busy, in fact might have work ahead, while other departments of the same plant might have little to do. In that event tenders could be submitted, perhaps at a low figure, on that the class of work required to balance the output and keep all departments busy. However few of these advantages occur if costs are not accurately known.

Elsewhere in this issue is an article dealing with the cost of sash. Figures are included which tend to show the effect of quantity production on sash costs or to put it another way, which show the high cost of special sash. As announced in this article it is proposed to run a series of cost articles dealing with such everyday items as sash, frames, doors, etc. Through the co-operation of interested readers it is hoped that it will be possible to show estimated cost figures on orders for these items and thus emphasize the wide variation that is so usual in quotations and estimates secured from different plants. The publication of such figures should also tend to establish recognized levels of values for different classes of millwork. Your co-operation will be welcome.

Active Fall Building Program

During October, construction contracts awarded in Canada, according to MacLean Building Reports, Limited, amounted to $30,078,100, compared with $23,382,100 in September, and $24,270,300 in October, 1922. Residential buildings accounted for $28.1% of the October total, and amounted to $8,434,600. Business buildings amounted to $4,345,600, or 14.4%; industrial buildings, $1,329,800, or 4.4%; public work and utilities, $15,968,100, or 53.1%. The value of contemplated new work reported during October was $33,968,000.

It is gratifying and re-assuring to consider the accomplishments of the year to date as compared with last. The Dominion total for ten months is $277,114,600, while the same period of 1922, was $237,-917,500. This is an increase of 16.5%. The increase is contributed by all forms of construction with the exception of residential buildings, although the decrease here is but 5.5%, and represents a drop of $4,958,100. This drop from a monetary viewpoint is negligible, but an analysis of the figures reveals a social problem that demands a speedy solution.

The number of houses erected to date this year is 15,988, as compared with 18,083 for the same period in 1922, a drop of 11.6%. In view of the fact that the drop in cost is but 5.5%, and that material prices have remained approximately stationary, here is incontrovertible evidence that the building of workers' homes has fallen off, while that is the type most needed to relieve the housing shortage. The non-union worker cannot make the initial payment on a home costing $4,500 or over, and if he can, he is unable to carry the burden of interest, taxes and principal payments without sub-letting. This condition defeats the principle of home owning. If wages cannot be increased then the structural problem of erecting houses or flats which can be sold or rented at decidedly lower prices than those existing to-day, cries out for solution.

Increasing Number of Technical Schools

The past summer has witnessed a gratifying activity in the construction and equipping of technical schools. This trend for more and better equipped schools augurs well for the technical and practical training which is being made available on an ever increasing scale for rising generations. In this connection it would seem as if woodworking is not being overlooked but that ample provision is being made to give a thorough as well as practical training in this important work.

The equipment that goes into some of these schools would do justice to almost any woodworking factory. For instance, one manufacturer of woodworking equipment writes that he supplied fifty-six machines to technical schools this summer. It is not likely that this indicates the complete installations for it stands to reason that equipment would be purchased from other Canadian manufacturers as well. The list of equipment supplied by this one manufacturer consists of lathes, emery grinders, saw tables, buzz planers, surface planers, band saws, tenoners, hollow chisel mortisers, cut-off saws, jig saws, ball-bearing shapers, pony planers, automatic knife grinders, belt sanders and sand riddle. If the boys taking the woodworking courses are trained to use the majority of these machines it would seem as if sufficient interest in woodworking should be aroused to result in many of them taking up this calling as a vocation. Boys trained in this manner should develop into good mechanics for they have a good foundation on which to begin their practical training in the shop or factory.

It may be that the increasing number of technical schools will go a considerable way toward solving that vexing problem, an adequate supply of well trained, skilled, woodworking mechanics.

We read in an engineering paper that it is a great mistake to have flat fire bars under a boiler used for burning chips. It is considerably better to build a Dutch over extension, to have sloping grates and a dumping plate at the back of the furnace.

Furniture $573,000,000—Amusements and Luxuries $9,354,000,000

A Greater Furniture Industry

Eighteen Dollars Being Spent on Pleasures and Luxuries Against one for Furniture — Industry Depending on Activity of Retailers to Create Demand — Organized, Concerted Effort is Necessary to Put Over the Big Idea

By Adolph Karpen*

My subject suggests a multitude of possibilities for the growth of the industry. By no means does it restrict itself to the thought of a greater volume of business only—because volume will follow as surely as day follows night if we use the means at hand to put house furnishings at the head of the list of "best sellers."

To realize these possibilities we must have a strong organization of forces and harmonious co-operation within our organization itself, recognition by the individual manufacturer of the fact that his interests are the common interests of the industry and that he will realize greater success through organized effort than in an individual way. Also, we must strive for a higher standard of quality throughout the products of the industry.

Figures Provide Food for Thought

A big constructive programme can then be developed on a sound basis, and when we consider figures such as I will enumerate immediately, it behooves us to study the future of our industry most carefully.

In 1922 Americans spent $3,500,000,000 for automobiles, $3,000,000,000 for amusements, $1,100,000,000 for candy, $900,000,000 for cigarettes, $854,000,000 for cosmetics, 573,000,000 for furniture.

Why does the public spend so easily nearly seven times as much for automobiles as for furniture? Is it simply because they represent a new pleasure, as well as greater comfort and luxury in travel? Not entirely, but rather, I believe, it is due to the unified action of the automobile industry in advertising and selling. The advertising of this industry has been stupendous.

In all these centuries in the making of furniture, a prime essential to living comfort, the advertising of our industry as a whole, I feel safe to say, by no means approximates for all that period of time the volume of advertising done in two decades by a new industry. It puts us to shame that we have allowed them to walk away with a field that was open to us long before they came into existence. The money (buying power) was there but we did not notice the spending of it as they have done, purely by an intelligent study of the possibilities and by capitalizing them in a legitimate and farsighted manner.

New Viewpoint Required

Few men hesitate to replace their car long before they have exhausted its service. Why? Because the industry instituted the plan and put it over in a big way. But the attitude of the same people about replacing old and obsolete furniture is quite the opposite. The old and antiquated idea of buying furniture for a life time should be abolished, in my opinion. We all know that furniture today is built just as well or even better than in the past and that it is built to endure long service, but environment outside the home is changing rapidly in this country, and the interior of the home should keep apace with the improvements which are seen in residence architecture.

The success of the concerted programme of the automobile industry cannot be disputed. It illustrates the power of organized and unified purpose, and the quick results obtainable therefrom. Do we realize that there is no limitation to the expansion of our great industry? Are we recognizing the potential possibilities of a greater publicity on a subject which is of universal interest—the home?

The exceptional individual furnishes his home artistically and comfortably because of his inherent desire for beautiful surroundings, not because of any desire induced by an intensive and concerted effort on our part, I regret to say.

Retailers Doing Most of Advertising

National advertising of furniture and house furnishings, with few exceptions, has been spasmodic and not well directed. Retail furniture dealers up to this time have practically carried all of the burden of furniture advertising, but the objective of their local advertising has been to sell their stock, largely on a price basis, and we have depended on them to a great extent to promote the demand for our products, for as an industry we are only now beginning to see light and to realize that it is really up to us to assume the promotion work.

Everybody talks automobile—do you hear furniture generally discussed? No, because people have been allowed to consider it only in the light of a necessity, and they are inclined to spend money for it grudgingly rather than spontaneously as they would for a painting, a piece of sculpture, or good books.

It is impossible for the individual manufacturer alone to revolutionize conditions. We are organized for the good of the industry but our efforts have been confined mostly to improvements in manufacture and marketing methods, and I am afraid that we have lost sight of the real mission of our industry.

We have succeeded in the one thing—our products are generally of a high character, and modern methods have brought good furnishings within the reach of all. But we must not lose sight of our market. Until recently we, as an industry have not conceived a way to tell the public in a big way of the things we have done for it.

*Address before National Association of Upholstered Furniture Manufacturers.

Constructive, Co-operative Effort Necessary

A way has presented itself in which every manufacturer of home furnishings may now join forces and make our industry the largest and most important on earth. I refer to the American Homes Bureau. It is a co-operative enterprise in the most comprehensive sense of the word. Its purpose is to educate the American people to an appreciation of and a desire for Better Homes. It is really a clearing house for all the varied interests which represent the home furnishing industry, and it is the only way in which diverse interests can co-operate and work together for the success of a tremendously big and tremendously important project. It stands so far apart from any special interest that all can deal with it in equal candor and confidence. It is a public movement endorsed by our chief executives of nation and state.

All are agreed that the movement is based on sound principles, and that it is fulfilling a real need to the public by way of Better Homes, since our whole national and civic life rests upon the home, and as Lord Beaconsfield has written, "the best security for civilization is the dwelling, and that upon properly appointed and becoming dwellings depends, more than anything else, the improvement of mankind." We do not need a psychologist to tell us that home environment, which embraces the physical appearance, as well as the spiritual influence, reflects itself in one's personality, ideals, and aspirations.

But there are many people who are ignorant of these causes and effects, and consequently neglectful and indifferent to the decorating and furnishing of their home, even though they may be ambitious for themselves and families. So that in spreading propaganda which will aid the growth of our industry we are not entirely selfish, for it is bound to react to the benefit of the citizen and the nation, as well as to our own interests.

Retailers Quick to Realize Value of Publicity

The Bureau's programme is comprehensive, covering every phase of the home furnishing industry, and it has received stimulus and co-operation from one of the most powerful agencies in the world—the newspapers. No individual manufacturer alone could have accomplished this. It required the momentum of a worthy cause, sponsored by responsible organizations, well organized, and a subject of universal interest.

Retail furniture dealers were quick to see the application of this bigger thought to their local advertising, and have capitalized the idea to considerable extent. You will find that many of the representative retail dealers, since the Bureau began to function, have adopted a broader policy, and they are quite generally using creative, as well as selling copy. They are in closer touch with the buying public in their selling than we are, and they possibly realize better than any other class that Americans respond quickly to the idealistic, and because they are a people vitally alive to progress in every phase of living, they are easily susceptible to propaganda on a subject so fundamental in its interest as that of "Better Homes."

But if this movement is to be of national scope and the new gospel of better and more beautiful homes is to be carried to every individual, the work must be done by the manufacturers through a centralized bureau such as the American Homes Bureau, and this bureau must have their enthusiastic support. The members of the bureau to date have given generously of both time and money to establish and maintain its work, but all of the manufacturers in the industry must help to bear the burden if we are to "carry on" this work and realize a greater furniture industry.

Result of Two Years' Work

In two years, in spite of the fact that much experimental work had to be done, the bureau accomplished wonders, and I wish to point out a few of the salient points in its work: The bureau issues a newspaper supplement of 32 pages dealing with that part of the home that consumes furniture and house furnishings; this supplement so far this fall has a circulation of nearly four million. In addition to the supplement, the bureau started a syndicate carrying a daily and weekly service; the weekly service has a weekly circulation of over a quarter of a million, and a daily service of a million and a half. Therefore we are really reaching over five million readers, carrying your story to them in a newsy sort of way that gets across.

The newspaper service is only half of what the American Homes Bureau is doing to help sell your products. The bureau carries on Better Homes Exhibitions all over the country, and the publicity that these shows get is invaluable to manufacturers and dealers alike. Not until the newspapers began carrying articles about these shows did you ever see the furniture industry or even the word 'furniture' getting on the front page. Then think what it means to have thousands of people pass through these beautiful exhibitions of furniture. In the recent Washington, D.C., show the attendance was between fifty and one hundred thousand for the week, and the hall was not nearly large enough to accommodate all that came. Shows have been held in more than twenty-eight cities, including large cities, such as Buffalo, Detroit, Minneapolis, Cleveland, Omaha and Denver, and during the first two weeks in December the Philadelphia Record is co-operating with the American Homes Bureau in putting on an exhibition, in the third largest city in the United States.

To the Advantage of all Manufacturers

We might say that the American Homes Bureau has just started its work in spite of the big things that it has already accomplished. The movement has gathered great momentum and with every manufacturer lending his support the individual effort and cost will become almost negligible. Surely every manufacturer here realizes that he is benefiting by this wide spread publicity on the subject of home furnishings and would very much dislike to think that the work could not be continued, whether or not he is at present a member of the bureau. Retail dealers everywhere today are doing more than their share toward stimulating the sale of better house furnishings, and it is up to the manufacturers to augment the efforts of his customers through concerted action —that is, through the bureau.

The bureau has conceived a plan by which every manufacturer will receive double returns in the support of the bureau, and that is through the American Homes Bureau Reference Book, which will be sent to every furniture dealer in the United States, and only members of the bureau will be included in the directory section. It is a great advertising medium, as it is constantly before the retailer and at the same time your subscription is making other important work possible for the bureau.

Body Making at Gray-Dort Plant

Manufacture of Body Parts Resolves Itself Into Quantity Production of Accurately Machined Pieces—Many Interesting Shaper Operations—Linderman used to Reduce Waste

An industry of comparative recent origin which in a few years has grown to such an extent that today it is a dominating factor in the woodworking field is that devoted to the production of bodies for motor cars and trucks. The development of this particular division of our industry and the size and importance to which it has attained may be judged from the fact that there are quite a few body plants that are cutting up lumber in excess of 1,000,000 feet a day and further it is suggested by those in a position to know that fully fifty to sixty per cent. of the toal hardwood production of the entire North American continent is used by body and automobile manufacturers.

Facing door frames on horizontal shaper. Note how knives are staggered and grooved to prevent tearing

These are stupendous figures and are worth a moment's consideration. It would require anywhere from eighty to one hundred cars to transport the daily requirements of one of these body plants. It is said that one of the largest of such plants unloads approximately six hundred cars a day. The system and yard organization required to handle this tremendous volume of lumber day in and day out, must be of considerable proportions, for, regardless of whether this material is stacked on kiln truck or unloaded onto the conveyors which carry it direct to waiting machines, the work involved in unloading the cars and maintaining a steady flow of lumber of the required grades and thicknesses into the plant is a task of no small importance. This material consists of hardwood of various kinds, in thickness from four to sixteen quarter. Owing to their many desirable features Canadian woods such as maple, and birch, chiefly the latter, are growing in favor for body work. Needless to say these unusually large body plants are not to be found on the Canadian side of the invisible boundary line dividing our country from our neighbors to the south.

In Vehicle Field Since 1853

In Canada, however, we are not without our body factories and while not comparable in size to those to which reference has been made, many of the Canadian body plants have attained fair proportions. In this article it is proposed to deal with the body department that has been equipped in connection with the production of Gray-Dort automobiles. Neither the car itself, nor the organization behind it, the Gray-Dort Motors, Limited, Chatham, Ont., needs much in the way of an introduction. This also applies to the original organization, William Gray, Son & Company. This large and progressive business had its beginning, and a humble one at that, when away back in 1853 William Gray settled in Chatham and opened up a small blacksmith shop. This smithy business gradually developed into the manufacture of carriages and sleighs on an ever increasing scale. The Gray Company kept pace with the development of carriages and buggies from the early types to the modern styles with solid rubber and pneumatic tires. It is only natural then that they should have turned their attention to that most modern of vehicles—the motor car.

William Gray met his death in a railway accident in 1883 and the responsibilities of that growing business fell upon the shoulders of his son Robert Gray, then a young man of twenty-one, now president and general manager of this prominent manufacturing organization. Incorporation papers were taken out in 1898 and in 1915 arrangements were completed with J. D. Dort, of Flint, Michigan, and the Gray-Dort automobile became an established fact.

New Problems Encountered

While woodworking entered to a large extent in the production of carriages yet the manufacture of wood parts for bodies and the manufacture of wood parts for carriages and buggies had little in common. The result is that the body division of the Gray-Dort plant is equipped with modern machines that ar

Trimming door frames to size and shape in one operation. Shaving exhaust pipe removed to give clear view

adapted particularly to the production of body parts on a quantity basis.

In general the manufacture of wood frames for motor bodies is strictly a woodworking job yet the operations as found in a body plant differ to some extent from those performed in what might be termed ordinary woodworking plants. This is not to be wondered at when one stops and considers that in the majority of ordinary woodworking operations the quality of the finished surface is a prime consideration. As the woodwork in a motor car body is practically all covered the smoothness of the surface gives way to strength and rigidity and the problem resolves itself largely into the quantity production of uniform, accurately machined wood parts.

In general the equipment of the average body plant follows along what might be termed conventional lines. For instance among the machines in the Gray-Dort plant are shapers, saw tenoner, double end tenoner, linderman, straight edging saw, sticker, planer, jointer, boring machines, band saws, band rip saw and similar tools. While these are familiar names, many of the machines are of special types. For instance the shapers, of which there are quite a number, are heavier with a greater distance between the spindles than is the case with ordinary shapers. In addition, as will be seen from the accompanying illustration, for many of the operations large four knife cylinder heads are used. There are also shapers with horizontal spindles such as the one shown in the door facing operation. These special machines are required by the unusual nature of the work.

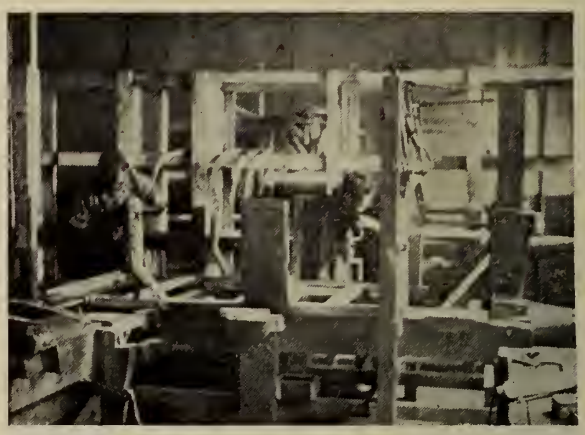
Machined to Size in Few Operations

The rough stock comes in on the kiln cars and is cut to length on swing cut-off saws. All the heavy ripping is handled on the band rip saw while the straight edging saw takes care of the thinner material. From here on the stream of material spreads going

Body nearing completion, all panels have been attached and the doors hung

to different machines. All floor board stock goes to the linderman where it is jointed up to the required widths. The rippings from the thick sill stock are allowed to accumulate and are also run through the same machine and worked into sills, thus saving what would otherwise be largely waste rippings.

All pieces that can be sized and dressed four sides on the sticker are headed toward that machine. The heavier stock is trued-up and then dressed on the surfacer. The double-end tenoner is used for equalizing the various stock to length and for making the majority of the straight tenons. Where the tenons are at an angle to the face of the material they are cut on the Pettingell saw tenoner, a wedge form being used to give the desired angle. The end grooves are made on another special machine consisting of a large



Open car body frame being assembled in special "jack" two panels have been attached

horizontal circular saw and a carriage similar to that found on a tenoner. Here again wedge forms enable the various angles to be secured.

Perhaps the most interesting phase of body work is the shaper operations. These are many and varied due to the number of curved and shaped pieces to be found in the wood body frames. Perhaps there is a lesson to be learned from the way these machines are used for sizing and shaping. In the Gray-Dort plant the irregular shaped pieces are first rough bandsawed and then shaped or dressed to size and shape in one operation on special forms. In some of the American plants the bandsawing is eliminated and the curves cut from the straight stock in one operation on the shaper. To ensure accuracy and uniformity and to assist with the work special forms of various kinds are used. One of the pictures shown herewith depicts the shaping of the outside of door frames. They are cut to size and shape in one operation so that they may be attached with little if any fitting. In fact the machine work is so performed that very little fitting is found necessary in the assembling operations.

Facing Doors to Shape

Another interesting operation is the facing to shape of the door frames. This is shown in one of the accompanying illustrations. A special type shaper with long horizontal head is used. Over this, a carriage is mounted, which carries the door frame over the cutters. Guides attached to the sides of the carriage bear on special guide collars on the cutter head spindle and thus the door is faced to conform to any body shape. The form swings on a central pivot so that the door frame is dropped in from the top and fastened in place, then the form is turned over and passed over the cutter. The second or reverse side is handled on another similar machine. After facing the outer edges of the door are shaped to size as described.

To ensure rapid and accurate assembly special

(Continued on page 67)

Does It Pay to Manufacture Sash?

Sash Costs in Many Plants Higher Than is Realized—Comparative Figures Showing High Cost of Special Items—Cost Study for December Issue

The obvious answer to the caption of this article would seem to be that it pays to manufacture sash provided the resale price is high enough to return a profit. Granted, but still it might pay better to purchase the sash from some manufacturer who specializes in the production of this line. Apparently a low level of values has been established for sash of various kinds, particularly special sash, with the result that it is doubtful if many woodworkers are making much money on this end of their business. This low level of values may be due to a lack of accurate cost knowledge or it may be because of unusually keen competition on an every-day commodity, but, whatever the reason, the existing situation is one that should have the careful consideration of most woodworkers.

Not long ago a well known manufacturer spent some time checking over and analysing his sash costs. Much to his surprise he found that not only was he losing money on practically every sash order put through his plant, but that he could purchase his sash cheaper than he could make it. He is of the opinion that many other woodworkers are faced with a similar situation but they do not realize it. It is not human to admit that another plant can produce for less than one's own but it stands to reason that a factory specializing in sash, one that is equipped and organized to produce this line on a comprehensive scale, would be able to make sash to better advantage than a general woodworking plant not specially equipped.

The manufacturer in question decided that henceforth he would buy practically all his sash, for he is convinced that by doing this he will be in a better position to meet competition and to make a profit on his sash business. This decision may be questioned by others. However, without definite information as to the volume of other work going through the plant it is difficult to pass on the wisdom of this change. There are doubtless many cases where the manufacture of sash is good business even though the production cost may be slightly higher than the price for which they could be purchased from strictly sash manufacturers or even though shuch stock were produced at a loss. The reason for this is that the volume of work going through the plant is sufficiently large to carry the factory burden, the added burden to be carried by the remainder of the work may be greater than the loss sustained on the sash orders or than the difference between manufacturing cost and wholesale price. In other words, the proportion of burden carried by the sash work may be greater than the loss entailed on sash orders or the difference between cost and wholesale price of the sash. In that event, to continue to manufacture sash tends to re-

Comparative Figures on Sash

Comparison shows .0939 cents per sq. ft. in quantity against .2560 cents per sq. ft. special

Description—
80 pieces, 4 light 1 3/8 sash order No. 207
Material—Western Pine No. 1, 2, & 3 shop

Cost	56.00				
Yard Burden	4.25				
	$60.25				
176 ft.. lin. 1 3/8 x 3 1/2	74 feet				
898 ft. lin. 1 3/8 x 2 1/2	258 feet				
	332 feet				
Add 10% waste	33				
	365 ft.	@	60.25		22.00
Machine—Labor	17 hours			5.15	
Burden	17 "	@	.50	8.50	
Bench—Labor	4¼ "			2.36	
Burden	4¼ "	@	.20	.85	$16.86
Factory Cost					$38.86
Commercial Burden					6.22
					45.08

Recap.

50 pcs. 2-4½ x 2-9½..330 sq. ft.
30 pcs. 2-4½ x 2-0½..150 sq. ft.
80 pcs. 480 sq. ft. Cost $45.08
Per sq. ft. .0939

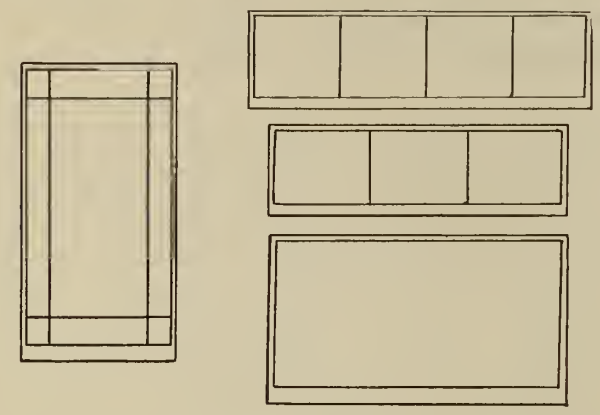
Description—
1 3/8 in. Sash, odd sizes
124 pieces order No. 787, 777, 775, 771, 766, 764, 761, 757, 754, 741.
Material—Western Pine No. 1, 2, & 3 Shop

Cost	$56.00				
Yard Burden	4.25				
	60.25				
1007 ft. lin. 1½ x 2½	315 ft.				
101 ft. lin. 1½ x 3¾	51 ft.				
112 ft. lin. 1½ x 3½	48 ft.				
13 ft. lin. 1½ x 6	10 ft.				
8 ft. lin. 1½ x 3	3 ft.				
174 ft. lin. 1½ x 2	44 ft.				
	471 ft.				
10% waste	47				
	518 ft.	@	60.25	3121	31.21
Machine—Labor	46½ hours			16.20	
Burden	46½ "	@	.50	32.25	39.45
Bench—Labor	21½ "			14.03	
Burden	21½ "	@	.20	4.30	18.33
Factory Cost					$88.99
Commercial Burden 16%					14.24
Total Cost					103.23

Recap.

124 pce. 402.26 sq. ft. Cost $103.23—Cost per sq. ft. .2566.

Send in Your Estimate of Cost on this Order for Sash



Order

10	Casement	Sash	1.3	x	4.0	Margin Lights
2	"	"	1.4	x	3.0	" "
1	"	"	1.8	x	3.0	" "
1	"	"	2.6¾	x	1.11	Three Light
1	"	"	2.5½	x	1.11	" "
2	"	"	2.6	x	1.10½	" "
2	Fan	"	3.10	x	1-0	Four High
2	Fan	"	3.10¼	x	1-0	" "
2	Casement	"	2.6	x	1.10½	Single Light
1	"	"	1.8	x	1.8	" "

duce what would otherwise be a larger loss. This is something that each woodworker must decide for himself. After all, the average manufacturer is in business to make as much money as he can, not to keep his plant going at all costs. If certain items can be bought to advantage rather than manufactured, then buying them outside is the proper thing to do.

One point that should be emphasized strongly is the high cost of manufacturing special items. A number of special sash, by that is meant special sizes rather than intricate or unusual designs, may cost three or four times as much as the same sash made in quantities. It is doubtful if the real significance of this difference or its extent is fully realized. For example the figures published herewith, submitted by one of our readers, indicate that on a square foot basis the cost of 124 pieces of odd sash covered by ten individual orders was nearly three times as great as 84 pieces of four light sash made under one order. The figures are 0939 cents as against .2565 cents. This is a striking illustration of the effect that quantity production or large orders for individual items has on the manufacturing costs. It also suggests that it might be well to scrutinize carefully the prices received for special sash to be sure that a loss is not being sustained on these orders.

Here is a good test. In order to check up your estimate of costs on odd sash and see how they compare with those of other woodworkers will you send in an estimate of your cost on the accompanying order for 1 3/8 in. sash. The figures submitted should show the net cost, without any allowance for profit and should give the following details: Estimated quantity of material, value and waste allowance; machine time, rate and burden; bench time, rate and burden, and finally the commercial burden you apply. The figures submitted will be published in December "Canadian Woodworker, without names of course, and will afford an interesting study of sash costs. It would be fine if the cost article in the next issue were to contain fifty estimates of cost on this order. It can if you will cooperate. The actual cost as kept by the woodworker who made these sash will be included as a basis for comparing.

Consumption or Sales Tax Regulations

Brief Outline of Changes Which Take Effect Jan. 1—Provision For Refunds and Deductions—Notification Should be Made Before December 1

Considerable interest is being evinced in the application of the amendments to the Special War Revenue Act which go into effect Jan. 1, 1924. Under these amendments a sales tax is payable as follows:

Collectors:

The Government requires the tax from those licensed.

(1) A licensed manufacturer who is producing more than $10,000 per year pays 6% sales tax on all sales to those who are not licensed.

(2) A licensed wholesaler pays 6% sales tax computed on cost to the said wholesaler on all sales to those unlicensed.

No Tax Payable:

(1) On exports.

(2) On imports by a licensed manufacturer of goods to be used in production.

(3) On imports by a licensed wholesaler.

(4) On sales by a licensed manufacturer to another licensed manufacturer of goods to be used in production and subject to the tax.

(5) On sales by a licensed wholesaler to a licensed manufacturer of goods to be used in production and subject to the tax.

(6) On sales by a licensed manufacturer to a licensed wholesaler.

(7) On sales by a licensed party to a Provincial Government.

(8) On sales by an unlicensed manufacturer.

(9) On goods bought in Canada by a licensed manufacturer to be used in production.

(10) On goods bought in Canada by a licensed wholesaler.

(11) On sales or imports of logs, fence posts, tiles, when produced and sold by the individual settler or farmer.

However, the six per cent. sales tax is to be included in the purchase price of such articles or materials that are not used in, wrought into or attached to the finished article and thus which would not bear a direct tax when the finished article is sold. This would seem to apply to sand paper, paint

brushes, equipment and supplies used in factory and office, coal and other items of a similar nature.

Refunds and Deductions

Licensed manufacturers or wholesalers who desire to make application for deduction of the sales tax paid on materials on hand on the 1st of January, 1924, as provided for in Section 19-BBB, Subsection 8, in respect of goods which have been, are being or are to be used in, wrought into or attached to articles to be manufactured or produced for sale, which articles are subject to sales tax, shall signify their intention of so doing in writing, to the Collector of Customs and Excise on or before the 1st of December, 1923, and shall make an inventory of the goods upon which claim is to be filed.

Such inventory shall show a description of the goods and trade number, if any, and the quantity and value of each kind of goods, such value being the value upon which tax was actually paid. Each items shall be serially numbered. Goods in transit on January 1, 1924, upon which the tax was paid or payable, shall be regarded as goods on hand.

This inventory shall be kept on file in the office of the licensee and shall be subject at all times to examination by the proper officers of the Department of Customs and Exise. A summary thereof shall be prepared showing the quantity and value with sales tax claimed in respect to each class of goods. This summary, certified to as true and correct by an authorized official of the claimant, shall be submitted in duplicate to the Collector of Customs and Excise at the Port in which the business is located, not later than March 31, 1924.

Goods in the hands of licensed manufacturers, producers or licensed wholesalers on the 1st of January, 1924, for resale in the condition in which imported or purchased by them, are to be included in the inventory of such licensed manufacturer, producer or wholesaler. When the goods are sold the invoices therefore shall be marked with a notation that the tax was paid prior to January 1, 1924, and the Collector of Customs and Excise shall be notified and the inventory claim reduced accordingly.

Licensed manufacturers or producers or licensed wholesalers or jobbers who desire the deduction, are required by law to submit their claim for the total amount of deduction, together with complete evidence, on or before the 30th June, 1924. The claim shall be made in the form prescribed by the Department viz: Form No. N. 17. The total amount of deduction claimed shall be established to the satisfaction of the Department of Customs and Excise, as not being more than the amount of tax actually paid by the manufacturers or producers, wholesalers or jobbers.

Licensed manufacturers or producers may make deductions on their tax returns for the tax paid before January 1, 1924, on materials used in the manufacture of goods up to the close of the period covered by that return.

The deductions from licensed wholesalers' or jobbers' tax returns may be made as the goods are sold.

Notification to Collector of Customs

The collector of customs and Excise should be notified, by registered mail, of the intention to apply for the deduction of sales tax already paid on materials on hand January 1, 1924 and which are going to be used in the manufacture of your line. This notice is required to be mailed not later than December 1, 1923. This notification is required so that the department may arrange for the work in connection with the verification of inventories and deductions which are to be prepared as at December 31, 1923.

Supervision in Relation to Accident Prevention

Responsibility Rests Largely With Management—Superintendents and Foremen Play Important Parts—New Men Should be Given Special Instruction and Attention

By F. G. Lovett*

In dealing with this subject the first thought that comes to our minds is "What is supervision and what is accident prevention?" It is important that we have at least a fair understanding of the meaning of these words and of their application if we wish fully to understand their relationship. Ordinarily, supervision means "inspection or control" but in its broader sense it means viewing the subject from above or having a broader outlook than those on a lower plane. We refer here to the mental and not the physical, for supervision is a mental and not a physical proposition. We have, in many of our industries, what they call supervision but which, in reality, is the worst kind of imposition. Real supervision is knowing, studying, instructing, leading and disciplining, when necessary, those who require supervising.

The words "Accident Prevention" are more easily understood, I am sorry to say more practiced. Properly speaking, an accident is an unforeseen occurrence, but for the want of a better term of expression we refer to all happenings where human beings or material are injured as an accident. Prevention, of course means to prevent or to stop an accident being an effect, and as there is no effect without a cause, it must necessarily follow that accident prevention means the removal or elimination of that cause.

In speaking of supervision we naturally think of the supervision and usually of the foreman, and while he may occupy a prominent place in the field of supervision, he is not by any means the only person involved, as we are too often so prone to think and say.

Management Should Take Initiative

The first person in an industry who must understand and realize his position and responsibility in industrial accident prevention is the manager. If, in his conception of supervision, he has not made accident prevention an important factor, then he has not a proper grasp of his position and is not living up to his responsibilities. How can he expect that his superintendents and foremen will show a high standard of supervision if he is not setting the example and showing the way? While his relation to the general scheme of things may be different to the other two, it nevertheless is the most essential, for if the head be not right how can it direct the other members of the body? It is necessary then that the management absolutely believe in "accident prevention"—believe in it to such an extent that it is made a part of and given first place in the industrial curriculum, taking precedence over efficiency and production, for we cannot have either of these without the former. He must show by his actions and by his words that he has the welfare and safety of his workmen fully at heart; he must make them feel that he is their friend as well as their employer; he must invite their co-operation in eliminating causes and reducing the number of accidents; he must see that provision is made for

*Inspector, Industrial Accident Prevention Association.

keeping accurate records of all accidents and that he receive a report of same at least once a month and should discuss same with his superintendents, should demand a written report of each accident from the foreman of the department where it had occurred, showing how it could or why it could not have been prevented. This also should be discussed with the superintendent and the responsibility placed where it belongs, which is not always on the workmen. He should at stated intervals hold plant meetings for the purpose of discussing accident problems, perhaps having an outside speaker to address the employees at some of these meetings; and at last but not least, he should co-operate through his own organization the Industrial Accident Prevention Association in an earnest endeavor to reduce accidents and compensation costs.

Superintendent Should Investigate all Accidents

Then comes the superintendent and his supervision must be very similar to that of the manager, with this difference: he comes in closer touch with the workmen individually as he usually hires most of the new help. He should study the physical and mental qualifications of the applicant and judge of his fitness for the work for which he is required and see that he is placed where he can give the best results with the least danger to himself and others. The indiscriminate placing of help is one of the causes of high accident frequency of many of our industries. He should see that foremen thoroughly understand their duties and have a proper conception of their responsibilities, co-operating with them in seeing that all possible safeguards are provided and that the plant is as physically safe as it is mechanically possible to make it. He should personally investigate all accidents, ascertain the real and not the apparent cause, and not be too quick to say that the workmen was careless, as perhaps the man may be sick, may have sickness or other trouble at home which distracts his mind from his work, or perhaps has not been given proper instructions by his foreman. There are many causes of accidents but it is so easy to say carelessness on the part of the workman—this seems to cover a multitude of sins. He should hold the foreman responsible for every accident which occurs in his department. He should see that proper bulletin boards are placed at certain places about the works, that bulletins are posted regularly and that they are not defaced. He, like the manager, must believe in accident prevention, realizing that the human element is the all important factor in industry and that all else is of secondary consideration.

The Part The Foreman Plays

Now we come to the foreman. We wonder how many men who are holding this position have any real conception of their responsibilities or of what their title really means. Do they know that to be a foreman is to be a leader? Do they realize that if they are not leaders they are not foremen in that broader sense? How many of them know what supervision means? I am afraid that too many of them are simply occupying and not filling a position. A foreman who is not interested in accident prevention is falling down on his job, he is losing one of the greatest opportunities to help his fellow men save life and limb that any man can possibly have, for no man connected with industry comes in such personal touch with the workmen as the foreman. This is a position that calls for real leadership, leading his men to think and act safely and setting them the good example. Supervision with him should mean making the new employee feel at home in his new surroundings, introducing him to his shopmates, making him acquainted with the shop rules for safety and inviting his suggestions for improvement in them or in the safety appliances used in the shop. He should never start a workmen on a machine without seeing that he thoroughly understands how to operate it and knows the hazards of same. He should not allow any workman to use a machine that is not properly guarded and if the guard is not satisfactory he should ask the workman's advice, with a view to making it as practical as possible. He should not allow horseplay of any kind. Shouting or making unusual noises about the works should not be tolerated as these are very apt to startle other workmen and cause serious accidents. A real foreman will never reprimand a workman in a loud voice but will rather take the offender aside or into the office where he can show him the error of his way, because a workman who has been "bawled out" usually gets "sore" and in this state of mind will not be thinking much about safety. It is the quiet talk, man to man, that counts in the end. A foreman must absolutely believe that all accidents are preventable and that one of his first duties is to prevent them. When an accident occurs in his department he will, if he is a foreman, ask himself the questions: "Have I been remiss in any way? Could I not have prevented this if I had given it more consideration?" Feeling his responsibility thus, he will determine that it shall not occur again. He will make safety a part of his every day life and so act and speak that his men will come to think safety also. A wise foreman will not tolerate a habitually careless workman but will dismiss him at once, realizing that the careless worker is the accident maker, and thus he will make safety part of his supervision, as it really is. If the foreman is giving real supervision he will have much harmony and co-operation among his men that accidents will be a thing unknown in his department.

Equipment for Technical Schools

The "Canadian Woodworker" is in receipt of an interesting letter from the Preston Woodworking Machinery Co., Preston, Ont., relative to the equipment supplied by them to various technical schools during the past season. The figures given, which are reproduced herewith, indicate an unusual activity in the technical school field. Further, if this activity continues, both practical and technical training in various fields will be made readily available to practically all young people. As far as woodworking machines are concerned those who work on them will gain a knowledge of the most modern types of woodworking tools, for these they are usually ball-bearing throughout and driven with individual motors. The list is as follows:

22 machines to the Windsor-Walkerville School.
6 machines to the Guelph School.
10 machines to the St. Catharines School.
8 machines to the Riverdale Branch School.
2 machines to the University of Toronto.
2 machines to the Weston School.
1 machine to the Technical School, Ottawa.

Well Equipped Woodworking Plant at Guelph, Ontario, Dates Back to 1855— Fleet of Eight Motor Trucks Handles Deliveries in Large Territory Cost System Given Special Attention

Approaching Guelph, Ontario, on the radial line one is likely to be attracted by a large sign board carrying the headline "The most modern plant of its kind in Canada." The reference is to the new woodworking plant of Robert Stewart, Limited, Guelph, Ont. As E. M. Stewart, the president, puts it, this slogan is not used boastingly but was suggested by a manufacturer of woodworking equipment and was first used in referring a prospective machinery buyer to the Robert Stewart factory. It is unusually appropriate for in planning and equipping this new plant a consistent effort was made to secure modern labor saving machinery and to reduce handling and labor whenever possible.

This well known business was founded in 1855 when a small woodworking plant was erected in Guelph. It might be of interest to note that the foundation for this business was actually laid in 1853 when Robert Stewart returned from New York and took a contract to build a large residence in Toronto. The original of this first contract is still intact and is an interesting document, being penned in longhand, typewriters not being in common use in those days, if they were known at all. Several moves were made before the plant was finally located on William St., in 1869, where it stood until destroyed by fire in 1921.

Robert Stewart, the founder of the business, was in active control until 1918, when he passed away in his ninety-first year. The management was then taken over by his two sons, E. M. and R. D. Stewart, who had been brought up in the business. E. M. Stewart, the president, looks after the sales and financial affairs of the company, while the manager, R. D. Stewart, is responsible for both yard and plant.

Fire Did Not Deter Them

Following the fire in 1921, which totally destroyed the plant, no time was lost in getting underway again. Within twenty-four hours the full complement of men were at work. Arrangements were made with the Bell Organ & Piano Co. of that city under which part of their plant was taken over and used until the new Robert Stewart factory was completed, special planing mill equipment secured from the Cargill plant being set up temporarily.

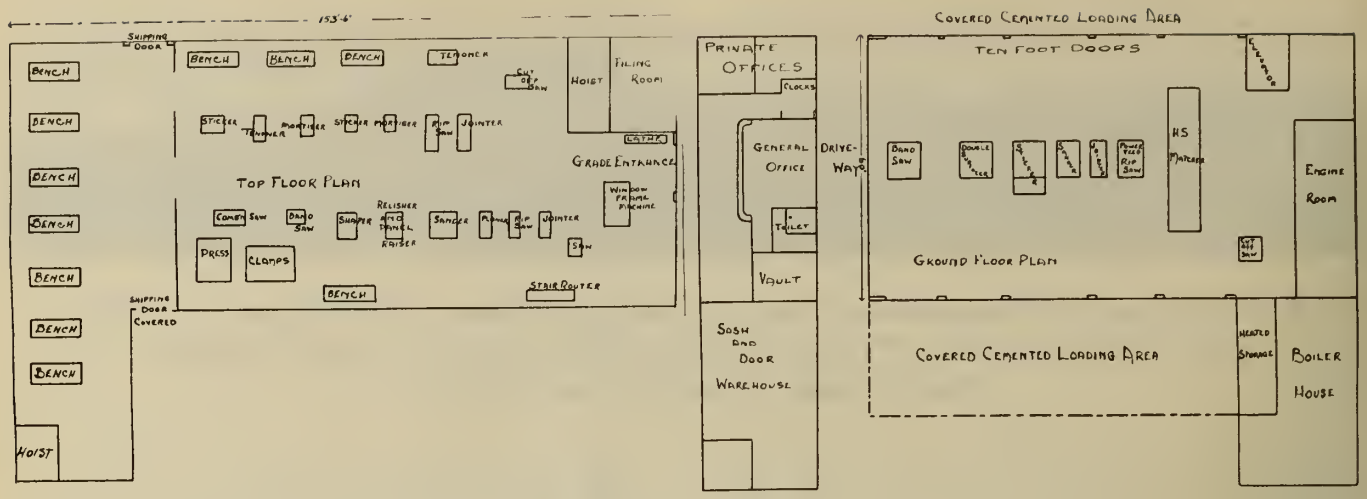
The new factory is a two-storey brick building with offices and planing mill below and factory and cabinet shop above. It is located in the centre of their lumber yard and practically divides the yard into two sections, rough stock on one side and dressed material, mouldings, etc., on the other. Excellent trackage facilities are at hand, for both Grand Trunk and C.P.R. tracks, with connecting switch, are just across the road from the property. The office is attractively finished in B. C. fir.

One of the accompanying illustrations shows how handling costs have been reduced in moving the lumber from the cars. As will be seen a set of gravity rolls carries the lumber from the car to the planing mill or to the yard, as desired. In the latter event the conveyor would be set-up to lead from car to yard. Often in unloading mixed stock, the machines in the planing mill are set to work the various sizes of material. The mill doors are opened and the operator of each different machine picks out the material he is feeding as the boards pass his door. This eliminates a sorting operation as well as results in reduced handling. More than this, sometimes a car is to be dressed or machined and piled in the large dressed storage shed on the far side of the mill. If it happens to go through the Yates 91 another set of gravity rolls is set up and the machine pushes the pieces right out to the shed. With this arrangement a car of material is unloaded, carried to mill, machined, carried to storage shed and piled in a minimum of time and with a minimum of labor. In fact, only three men are required; one unloading, one feeding the Yates 91 and one piling in the shed. A car is often handled in this way in from five to seven hours.

Gravity conveyor used to reduce costs at Robert Stewart plant

Full Complement of Modern Machines

The equipment in the planing mill consists of resaw, C.M.C. double surfacer, Yates 108, power feed rip saw, Yates 91 and a trim saw and buzz planer. It is all set so that it feeds across the building permitting the material to be taken in the large



Layout of plant of Robert Stewart, Limited, Guelph, Ont. Note grade entrance to second floor

doors on one side and out through the doors on the opposite side.

The woodworking and sash and door plant on the floor above contains the usual complement of modern machines including a Preston ball bearing planer. In addition there are a number of special machines not usually found in Canadian plants, such as Phillips window frame machine, Challoner sash sticker with chain feed, and Smith radial router. This latter is an interesting piece of equipment being constructed along the lines of a radial arm disc sander. The work is laid flat on the table and the router cutter is guided against a suitable form. This machine is capable of turning out a satisfactory volume of work. Recently the stock for fourteen stairs, that is twenty-eight stringers, were routed in an hour.

The Robert Stewart Company, while doing a general and special millwork business, specializes particularly in the production of sash on a wholesale scale. They have two complete sets of sash equipment, that is two stickers, two mortisers, two tenoners, etc., and give special attention to the quality of their product. A large part of the sticking is done on the special sash and door sticker mentioned previously. Special Shimer heads have been provided for 1⅜ and 1¾ sash and 1⅜" and 1¾" doors. This enables the machine to be changed from one run to another with very little lost time, sometimes a minute or two being all that is necessary. The positiveness of the chain feed also has a desirable effect on production.

Value of Sharp Cutters Appreciated

The filing and grinding room is completely equipped to take care of all saws and knives as well as the special heads used on different machines. The man in charge of this department is responsible for the condition of all knives and saws. In addition he looks after the changing of the knives on such machines as planer, jointer, etc. Centralizing the responsibility for condition of the knives and saws on the various machines works out advantageously, for not only is the filing room man responsible for keeping the various items sharp, but it is his duty to see that the sharp saws and knives are placed in operation as required.

This company believes firmly in knowing its costs. They are members of the Millwork Cost Bureau and have adopted the method of ascertaining and distributing burden advocated by the bureau. Thus they know their yard burden per M feet, their kiln burden per M feet, the factory burden per hour of machine time and per hour of bench time, and finally their commercial burden. This latter item includes sales and delivery expense as well as office and management overhead. Some such distribution of burden is very desirable for then each department must carry its own overhead. Under this method the customer who buys a quantity of rough lumber is not called upon to pay any proportion of the carrying charges of kiln or plant.

Have Developed an Extensive Business

In addition to shipping stock to all sections of Canada a large local trade is enjoyed. By local is not meant Guelph and surrounding territory but takes in Kitchener, Preston, Hespeler and other nearby towns. In fact only recently several trucks of material were delivered to New Toronto in competition with Toronto firms. This desirable trade is not so much a matter of price as of service, made possible by a fleet of eight delivery trucks backed by an adequate well assorted stock. These trucks are in continuous operation delivering material here and there in the territory covered. Good stock, backed by fair treatment and an efficient delivery service is a good foundation upon which to build a permanent, prosperous business.

In addition to the factory proper there are a number of other buildings most of which are used for storage purposes. These include a heated storage for hardwood flooring and two large modern steel clad sheds for mouldings, interior trim, dressed stock and kiln dried material. These buildings afford ample storage space for a large, well assorted stock.

In keeping with the progressive spirit which dominates this organization, improvements and additions are always under consideration. This applies to equipment and methods as well as to buildings and other phases. If new equipment presents an opportunity to improve the quality of the output or to effect worthwhile economies in costs it is given every consideration and if it "looks good" they have little hesitation about buying it, regardless of how modern their present machine may be. This is backed by a realization that it is good business to give all customers the utmost in value and quality at a fair price based on actual manufacturing costs. Naturally it is advantageous to keep those costs as low as possible and to reduce them further whenever the opportunity is presented.

Filing and Setting Narrow Band Saws

Special Attention to Gullets will Reduce Cracks—Continuous Service Shortens Life of Blades—Advantages and Disadvantages of Spring and Hammer Setting

By F. W. Wardwell*

There is no class of tools used that is so neglected and abused as that of saws and yet the saw in many cases stands for the heart of production. The neglect of this tool has been going on ever since Samuel Miller, in 1777, brought out the first circular saw and William Newberry, in 1808, the first band saw. During the past forty years various machines have been invented for the care of saws and only in recent years have these machines attained perfection.

There are no hard and fast rules to go by in determining the care of a saw. The narrow band saws and small circular saws used in numerous factories throughout the country are never given the attention that the heavier types of saws, used in the lumber mills and particularly in our large Western lumber mills, receive. In large lumber mills a saw is treated in a number of different ways, depending on the kind of lumber that it is used to cut, on climatic conditions the mill is running under, whether the lumber is frozen or not and still further, whether hard or soft lumber is being run and the kind and quality of this lumber. It is, therefore, impossible to cover all the laws governing the use of saws in a few words.

Long Runs Shortens Life of Blade

There are, however, a few rules to be laid down that in a general way, are of great assistance to the saw man and more especially to the saw man in a manufacturing plant who has not been brought up filing saws. The narrow band saws used in the majority of factories perhaps give more trouble than any other class of saws. There are several causes for this, the first and chief of which is that the narrow band saw is frequently severely strained. It is not uncommon to find these saws being run 15, 20 and 30 hours at a time, just as long as they will show any signs of cutting. To one who has made a study of steel it is a well established fact that fatigue takes place in all metals. An expert saw filer in a big lumber mill, where they use heavy bands, usually establishes a time when the band saws are taken from their work, irrespective of their condition as regards dullness of teeth. This is purely to give the steel a rest. This should be applied to the narrow band saws the same as to the wide band saws. It is a good rule never to run a narrow band saw more than 8 hours at the most.

Having established a period of time for the saw to run, the next question comes up as to the sharpening of a saw. Here again it is impossible to state what shape of tooth the saw should have without going into great detail as to the kind of wood it cuts and the condition of the wood. Any modern, up-to-date filing machine can be made to produce any shape of tooth with a proper rake and fleam to meet the specific requirements of the work the saw is to do. There is a point, however regarding filing machines now on the market that should be carefully looked into by one who demands the best results in work from his saws. The chief feature is that in the past the older types of filing machines have not had the power and strength in the filing arm to permit of the file properly cleaning out the gullet of the tooth. In the majority of machines the file practically rests on light springs or the weight of a light arm holding the file and when the file encounters a hard spot in the saw steel it rides over it and does not cut down the depth that it has reached in the soft part of the saw, with the result that were careful measurements to be taken of the depths of the different saw teeth, some would be found shallow and some deep, according to whether or not the steel was crystallized or hard in certain parts of the saw blade. One must bear in mind that the cleaning out of the gullet of the tooth is a most essential feature in the resharpening of a saw.

Perhaps 99% of the breakages of narrow band saws occurs from the improper cleaning out of the gullets of the teeth. The saw filer who makes a minute study of this point in particular will overcome many difficulties with his saws and especially his narrow bands. If one were to examine the gullets of the teeth in a narrow band saw with the care and concern that an old filer watches this point in the heavy log band, it would be noted that minute cracks start to grow from the very bottom of the gullet. Numerous causes may account for these cracks which rapidly grow while the saw is at work and finally end by the saw breaking. A powerful filing machine properly operated, with care taken to see that the file at all times cleans out the gullet of every tooth, will stop this great cause of trouble.

Another point in connection with the modern filing machine is the fact that the file should not strike the tooth with a heavy blow; it should enter the tooth gently and as the file progresses through the tooth, should take a heavier cut along the middle of the file and then leave the tooth gently. This has a great tendency to eliminate all burr, but beyond this, the movement of the filing arm, or of the file, should be in the elliptical plane; by that we mean that the file should not go straight down and rise straight up but should rise up at an oblique angle. If you stop to consider, this is exactly the movement that a man's arm holding the file would take were he filing the saw by hand.

Regarding the adjustment of the file, great care should be taken at this point and the filer should have a chance to move the point of the file 1/32 in. one way or the other as well as to raise the file at the point and tang end. By having adjustments that permit of his doing this he can still greatly reduce any tendency of burr.

Heavy Cut Not Desirable

The average man in charge of narrow band saws in a factory, using an automatic machine for sharpening the saws, makes a mistake in thinking that a band saw run through a sharpening machine once is sufficient. Again we refer to the log mills where band saws are scientifically cared for. It is very seldom in a heavy log mill that a filer does not permit his

*Wardwell Manufacturing Co., Cleveland.

band saws to go through the machine at least twice, if not more times. His reason for doing this is that he does not want to miss cleaning out the gullets of any teeth—that is vital; and second, he does not believe in trying to sharpen the tooth with a heavy blow in one operation, whether he is using a file or a grinding wheel. Aside from this, a file can not be crowded in its work, it can digest just so much and forcing it only wears away the file. One must remember that steel is sensitive; a heavy blow produces in the steel a jarring of the molecular arrangements and contortion. Therefore, it is better to let a saw go through a sharpening machine at least twice, and more times if the work is not crowded; but the motto of this paragraph is "Treat the saw tooth gently in the sharpening process."

We have now made the teeth all of the same height and size by what is known as jointing and this jointing is obtained on the majority of automatic filing machines or grinders, by feeding one tooth away from the face of the tooth which is in contact with the face of the file, or the face of the grinding wheel. By that is meant, never allow the feed point , or feed finger, to come nearer the face of the tooth in contact with the file or grinding wheel than just the width of one true tooth. In this way the teeth are all made the same height and are evenly spaced.

We will not go into the tensioning of narrow band saws as that more aptly belongs to the heavier saws used in the log mills, all of which saws are resharpened by grinding.

Spring or Hammer Set—Which?

Next comes the setting of the teeth on narrow bands. There is no greater mistake made than that of attempting to set teeth on a saw by a hammer blow. Here again arises the question of disarranging the molecular construction in the steel. There is no better test for this, and it has been worked out a great many times by old filers, than to take a saw and set the teeth on it by a hammer blow and a similar saw and set the teeth on that one by a pressure set. It is found that the saw which had the teeth set by a hammer blow will not infrequently have these teeth break off, while the saw which had the teeth set by a pressure set does not show this trouble. It is not difficult to imagine that by taking a piece of steel and putting it between two dies and pressing it, you have simply made the steel fibres more compact; you, therefore, have toughened it, but take the same piece of steel and try a sharp blow, sufficient to bend it, and you have shattered the fibre in the steel. It may not appear thus to the naked eye but a miscropic examination shows it. We, therefore, can say with all force, never treat the delicate steel in a band saw, where the gauge is light, by hitting the teeth a hammer blow to set them, in preference to a pressure set.

As regards setting the teeth on band saws, the amount of set is largely governed by the work the saw is doing and according to its nature and its condition. Needless to say the set on a band saw should be the same on both sides and it is a well-known fact that only the upper third of the tooth should be set. It is absolutely wrong to put any set in the saw tooth in its lower half. Finally it is scarcely necessary to mention that all teeth on a band saw should be set before being filed as by doing this a cutting edge is given the tooth rather than a shearing edge, and the face of the tooth on the band saw is filed straight across at right angles to the plant of the saw.

Summing up briefly the points brought out in this article; the first is a most thorough cleaning out of the gullets of the teeth; second, the most gentle handling of the saw in the operations in contact with it—by that we mean never rendering it a severe blow of any kind; and lastly, the use of a pressure set in the setting of the teeth and the accurate setting of each tooth on its respective side.

Timber Supplies Being Rapidly Depleted

The U. S. Chamber in 1921 took up the study of "Forestry Policy," and appointed a committee of ten able men for its study. After months of work and conferences from coast to coast, it has made a most interesting report, and its eight recommendations are now up for action under Referendum 42.

The report quotes some remarkable findings, among which we note as follows:

The original Virgin Timber in U.S. was	5,200,000,000,000	ft.
The remaining Virgin Timber in U.S. is	1,600,000,000,000	"
7% Virgin Timber cut in 70 years.		
The Annual growth	6,000,000,000	cu. ft.
Used per annum	26,000,000,000	" "
Each year 4½ times more used than grows		
Michigan production ranked 1st in 1890	4,245,717,000	ft.
" 16th in 1920	749,800,000	"
Now imports 70% from Texas and Pacific Coast.		
The Lake States have left 20% of original pine forests.		
New York ranked 1st in 1850	1,300,000,000	ft.
" 23rd in 1920	410,900,000	"
Now imports 80% of her lumber.		
Pennsylvania ranked 4th in 1899	2,321,284,000	"
" 20th in 1920	520,000,000	"
Now imports 80%		
Minnesota ranked 3rd in 1899	2,341,619,000	"
" 19th in 1920	576,300,000	"
Oregon ranked 23rd in 1899	734,181,000	"
" 2nd in 1920	3,317,000,000	"

Hardwood forests in Michigan and adjoining states practically exhausted. Future supply in Southern States which has 50% of supply. These figures show some remarkable facts and point very decidedly to the need of early steps for reforestation and preservation of what is left.

Standard Lumber Sizes

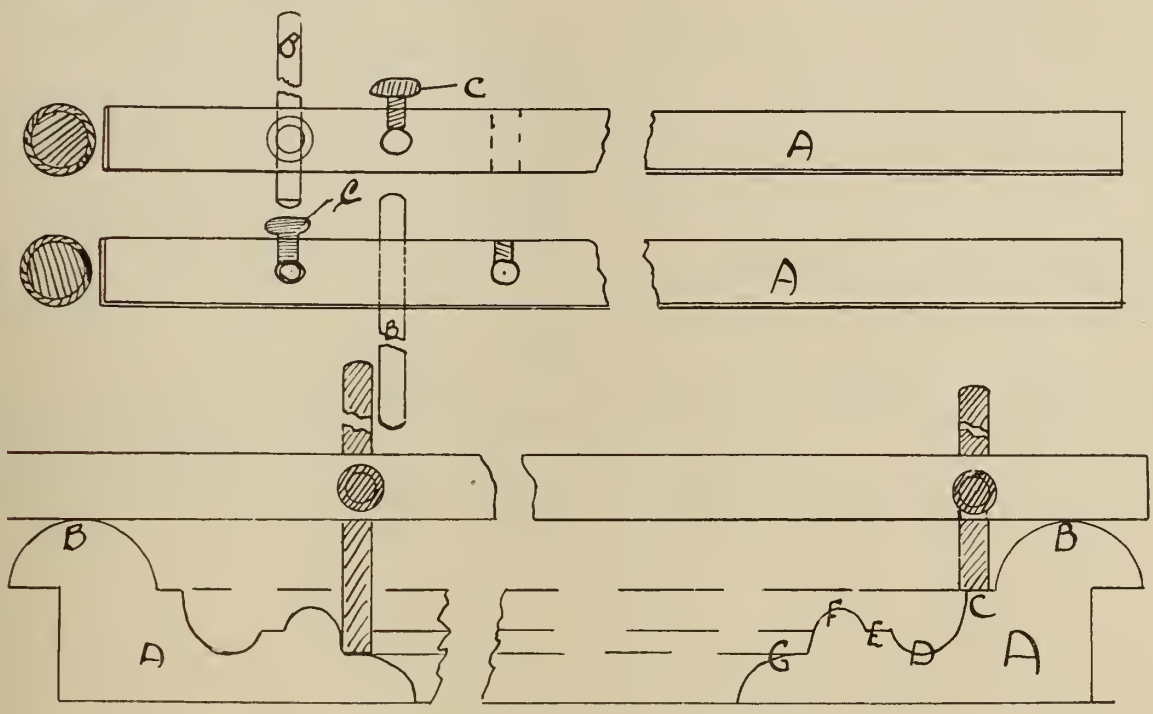
The Consulting Committee of the Central Committee on Lumber Standards, met at the Congress Hotel, Chicago, October 30 and 31 and registered substantial and satisfactory progress in developing recommendations on standard sizes and measurement for yard lumber.

This meeting was well attended and during the entire two days most earnest and undivided attention was given to the work of the Committee.

Definite recommendations have now been made that 25/32 S1S or S2S (measured at standard commercially dry shipping weight and moisture content for each species) shall be adopted as the minimum thickness for the standard yard boards, and 13/16 for the standard factory boards:

That 1-5/8 S1S or S2S (measured at standard commercially dry shipping weight and moisture content for each species) to be adopted as the minimum thickness for standard dimension not more than 12 inches wide:

That the finished widths of boards, dimension and finish S1E or S2E (measured at standard commercially dry shipping weight and moisture content for each species) be 3/8" off, on lumber of standard widths less than 8", and 1/2" off on lumber of standard widths of 8" or over:



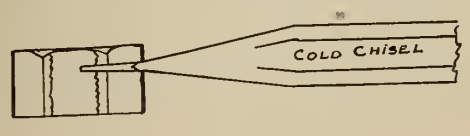
A type of depth gauge that will often save considerable time

A Page of Practical Shop Kinks

A Number of Suggestions of Interest to the Practical Man—Depth Gauge for Circular Mouldings—Convenient Calipers With Set Gauges

By Millwright*

A handy tool to have around any woodworking plant for the hand lathe operator is a depth gauge. This may be made from a piece of 5/8" round steel rod of any suitable length, say two feet. Six 5/16" holes are drilled in each end, the holes being one inch from centre to centre and staggered at right angles.



Suggestion for tightening loose nut

In addition a number of 5/16" steel rod in various lengths from three to six inches should be provided for feelers or fingers.

For face plate work this is an unusually handy device. It can be set to give the depth to make four different cuts to suit the different members of the work. Suppose you have to turn a few molding circles to match up with straight molding, the accompanying sketch illustrates how it works. Molding A. has five members with different depths from the face B. B. these are at C. D. E. F. G. Now set two of the small feeler rods at one end of the long rod, at right angles to each other to come in contact at C. & D. Repeat this at the other end of rod to contact with E. F. G. Roll the guage to get the right rod for each member and a difficult job will be made easy. This little rig should not cost more than two or three dollars and will save many times that amount in short order.

Making a Loose Nut Hold

Often a nut on a woodworking machine becomes loose and requires frequent setting up. A cut with the hack saw, edge ways, half way through the nut, this slot spread with a cold chisel as shown in sketch, cures the trouble and does not mar or weaken the nut.

Another Way to Keep a Nut On

The other day I was much troubled with a certain 5/8" nut persisting in slacking up apparently without cause. To remedy this, I ground an ordinary nail

Ball points for calipers

Centre punching to make nut hold

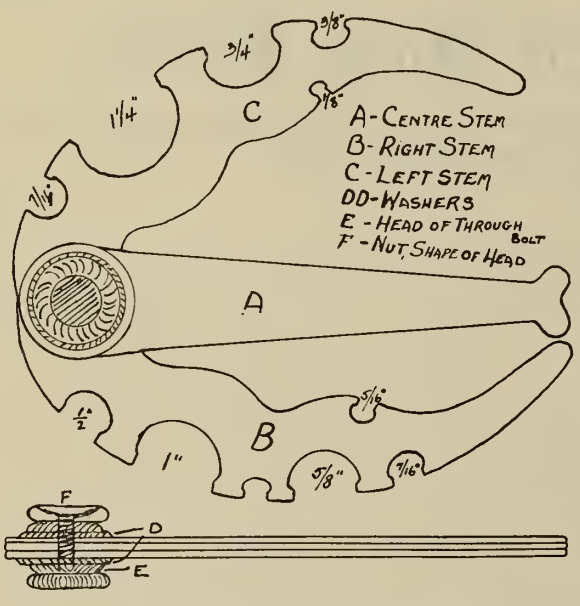
set into a centre punch, then punched with this tool all round the upper side of nut as shown at B. The nut did not give any more trouble. This is a simple way to keep a troublesome nut from working loose.

Improved Calipers

Woodturners can materially improve both outside and inside calipers by fitting steel balls on the points. Anneal the balls by heating cherry red and cover up to cool in fine ashes. Drill a suitable hole in the balls and file the caliper ends to fit, then solder balls in place. Calipers thus fitted will not catch in the work and require resetting. The accompanying sketch shows how the balls are fitted on the caliper points.

Combination Caliper and Set Gauges

This handy tool was made out of a piece of 16 gauge handsaw blade. It consists of a set of calipers with two wings, and set gauges ranging from 1/8" to ¼" diameter, giving 11 set gauges and two adjustable gauges. The bolt head E. and outside of nut F. are curved toward the centre giving the user a nice grip for thumb and fingers. Bolt and nut are knurled and the fingers will tighten up the knuckle to hold the wings rigid when set to size desired. A handy size would be about 4½ or 5 inches which would permit either wing to be set up to four inches in diameter. The maker of the set here illustrated is working on a pair that will be large enough to handle work up to ten inches. To know the value of this tool you will have to make and use it. For repetition work it is a great time saver, and for making uniform pins it is much more accurate than using ordinary calipers.



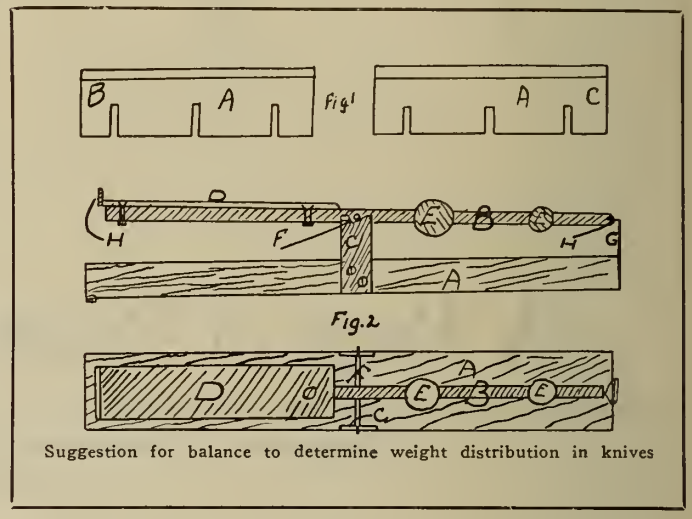
Combination calipers and set gauges

Article on Balancing Knives Criticized

The article on "Balancing Knives for the Moulder" showing a sketch of a knife balancing device, which appeared on page 124 of the October "Canadian Woodworker" was very interesting. The importance of accurately balancing knives and cutters for all types of rapidly revolving heads cannot be emphasized too strongly. Even when care is exercised it is difficult to secure a good running balance and eliminate all vibration from the head or arbor.

My criticism of the article in question, if it may be called a criticism, is that it does not go into the subject thoroughly enough. Undoubtedly it helps some to have opposing cutters of the same weight, but it is still better if the corresponding parts or sections of such cutters or knives are evenly balanced.

Numerous stickermen are satisfied when they have two knives show the same weight on balance scale. Figure 1 shows how this may be all wrong. A. A.



Suggestion for balance to determine weight distribution in knives

shows 2 knives 4 in. x 8 in. x 7/16 in. thick, of exact weight yet one knife is heavy at B, the other heavy at C. When bolted on cylinder there will cause a jarring or throwing, which will be hard on the shaft bearings, and will not produce smooth cutting or a smooth surface. Fig. 2 shows a home made balance which by its use the true balance of any pair of knives can be had. By adjusting the balls or weight to one knife, and reversing the knife (end for end) the pointer G. will show if there is excess weight at one end.

The scale the writer employs has been in use possibly twenty years and can be made at little cost by any handy man. A. is wood base 2 in. x 4 in. x 30 in. long. B. steel rod ¾ in. dia. x 27 in. long with ¼ in.

Don't Say It—Act It

Did you find anything of interest among these items? It is doubtful if there is a plant in Canada in which numerous practical stunts, such as described here, have not been worked out and put into operation. Wouldn't it be interesting if each issue of the "Canadian Woodworker" were to contain a page or two of practical ideas covering different phases of woodworking. The ideas and suggestions are available but they are buried in your plant so that it is up to you. Where you send in two or three suggestions you stand to get dozens in return. Plenty of space is available. See if we can't have two pages in the December number. We can if you will. Will you?

hole at centre to take steel rod F., and two holes at one end to fit stove bolts to hold platform D, which is made of light steel plate 3 in. wide x 13 in. long, with one end turned upwards at right angle. As shown at H. C, are of steel plate knotched at top as shown, F. short piece of ¼ in. rod, made V shape at each end and tempered quite hard. E are weights, balls or other shapes, C. Finger or pointer, H. cut made with hack saw, in end of rod B. If planer knives as well as sticker knives require balancing, the scale would have to be made longer and slightly heavier.

Even though knives show the same width at each end, there is always some variation in the thickness of the plate, and sometimes the bolt slots vary in size, causing one end to be heavier than the other. These faults being remedied, better and smoother work will be the result. Often the machine (possibly an old one) has been blamed and condemned, when the fault all the time was in the unequal weight of the knives, the longer the knife the more important it is to have this correct balance maintained. This is a case where the man behind the machine is more important than the machine. Unequal balance in knives will take more out of cylinder head gearings in one day, than will a run of a month with well balanced knives. A good plan in balancing knives is to weigh bolts and washers in place with each knife.

Increasing the Demand for Wood Boxes

Advertising Campaign Carried on by National Association Resulting in Increased Business—How Appeal is Being Made to Various Interested Distributors

By V. C. Hodges*

The problem which confronted the wood box industry at the begining of our present active advertising campaign was many-sided, and necessitated first of all a more widely reaching investigation and search than is ordinarily required in the general process of advertising a manufactured product.

This was due principally to the fact that our business is associated so closely with practically every other major industry in the country, with but few exceptions. This fact necessitated that each particular industry using shipping cases be searched for material upon which to base our approach and selling arguments.

In this condition we were aided to a considerable degree by statistics with regard to the number and amounts of damage claim items paid by the railway companies last year, which amounted to $105,000,000. This startling figure readily gave us an opening upon which to base all subsequent material.

How Start Was Made

It must be borne in mind that the economic side of this question also had a direct and important bearing upon our work. No one can doubt that such a terrific damage claim item forces a burden upon all shippers, and that anything accomplished towards lessening that burden would benefit business generally.

In addition to this, the lumber question presents another phase which has a vital significance. By far the majority of boxes used as shipping containers are made from what is called "box lumber," which is suitable for practically no other purpose. Inasmuch as every log which is cut by lumber producers contains a definite proportion of box lumber, it can readily be seen that the lumber producer must receive a definite amount of money from every log he cuts, and in order to do that he must sell both his commercial grades and his box lumber at definite prices. In the event that he cannot sell his box lumber, due to low production in box factories, he must raise the price of the other grades, thereby forcing on manufacturers who use lumber in making their product an increased cost, which could be obviated were box production increased.

At the time our present campaign began there was in this country a surplus of box lumber above normal requirements of approximately 700,000,000 feet.

Creating Demand for Wood Boxes

After analysis it was decided that our first efforts should be directed at the distributors or wholesalers of various products packed in shipping containers. This first advertising approached these wholesalers both through the trade publications in their field and by direct-mail channels, both seeking to drive home the fact that loss in time and money to themselves could be in a large measure eliminated by their insisting on better packing. After this method had progressed for several months, we offered to supply those wholesalers, in whatever quantities they desired, with gummed stickers which read as follows:

> Believing that the best interests of manufacturer, wholesaler and retailer require the most serviceable container, we request that the attached order be shipped in **Good Wood Boxes.**

These stickers were to be attached to each individual order sent to manufacturers.

Simultaneously with the distribution of these stickers, which we distributed to the amount of some 500,000 we opened our campaign on the manufacturers of commodities which should be packed in wood boxes. This campaign progressed through channels similar to those approaching the wholesaler, that is, through the trade papers and by direct mail.

Appealing to Larger Shippers

This secondary campaign was timed so that the selling arguments were received at approximately the same time orders were being received from the wholesalers bearing our gummed sticker. The effect of this can be well imagined.

Not only did we succeed in convincing a large number of manufacturers that our type of shipping container justified itself by doing its part to eliminate the tremendous damage claim item, but the distributors, or customer group, were coming out flat-

*Advertising Manager, National Association of Box Manufacturers.

footedly in favor of our product by requesting that each individual order be shipped in that manner.

All of our copy has been devoted to one purpose, and that is to promote better packing, thereby reducing inestimably the loss industry has suffered through damaged shipments. Our direct-mail advertising in the majority of instances has been printed from three-color Ben Day plates, and by the use of high quality cover stock or folded enamel, as the case required, we have achieved some unusual printing effects which have gone far in promoting the success our campaign has met with.

Our method of selecting publications has been the usual one, that is, the selection of the leading trade publications in each field, based upon editorial standing and circulation distribution. Being a national organization, with our members located in all parts of the country, we necessarily were desirous of reaching commodity manufacturers in all sections of the country, and therefore selected only publications having thoroughly national circulation.

Selling Retailer or Final Consumer

Another most interesting angle of our campaign developed a short time subsequent to the use of the gummed sticker referred to before, we decided that manufacturers who shipped their product in better shipping cases for protection against damage had a selling point which it would be advisably for them to bring to the attention of the people purchasing from them, and so from this evolved what we call a "Good Packing Slip," which was printed on a good grade of bond paper and shipped without cost in any quantity desired to manufacturers using wood boxes. One of these slips was to be enclosed in each box just before the cover was nailed on.

In this way the customer, upon receiving and opening the box, would instantly see this slip bearing the message that the manufacturer had packed his product in that manner in order that unnecessary damage and loss would be eliminated.

We distributed in excess of 1,000,000 of these packing slips, every one of which carried our message to the ultimate receiver of the loaded box. By the use of these slips we have not only sold the manufacturer on the advisability of calling to his customer's attention his better packing methods, but we have also impressed upon the receiver of shipments the fact that their interests are being served by the manufacturer who follows this system.

While all of this advertising has been entirely of an institutional character, not seeking for direct sales, we have received a surprising number of inquiries from large manufacturers of various types of commodities, asking that they be referred to some of our member companies who could supply their needs in the shipping container line. In addition to this our members are constantly advising us of new business in large quantities which has been produced by our efforts.

I believe that these results are due not only to the logic of the selling arguments which we have advanced, but to the way in which every step has been almost complete tie-up with every other angle of the work.

To dry glue joints of boards, which have been put into a revolving clamp, a small electric fan to send a current of air helps.

New Body Construction Favorable to Wood Framing

The new Jewett brougham body built by J. C. Widman & Company of Detroit, embodies innovations in construction, which are of particular interest to the woodworking industry, as this new construction stimulates the use of wood framing.

Recent developments, such as the all-steel, baked-on enamel body have minimized, if not eliminated, the use of wood in that type of construction, owing to the fact that the wood frame cannot stand the high temperatures (approximately 500 degrees F.) of the baked-on enameling process. It is of particular moment in this connection to note that the new Widman construction provides for a baked enamel finish by baking the metal sections in one process and then applying these completely finished metal panels and parts on the wood frame.

This type of construction gives all of the advantages of the baked enamel finish, providing lasting lustre and deep color, and at the same time preserves all of the advantages of the wood frame body, such as its resiliency, its vibration absorptive qualities, etc.

While the all-steel body has been very acceptable in providing the lasting finish through the baked-on enamel process, it has presented many disadvantages from the standpoint of the ulitmate user by virtue of the absence of wood. This Widman process represents a new type of construction and one which would appear to be the first to present a definite check to the heretofore obvious trend toward all-metal construction.

Busy Chatham Plant

Contracts necessitating the employment of additional cabinet makers and machine men for three months have been secured by the S. Hadley Co. of Chatham. The company has the contract for the complete bank fixtures for two large branches of the Royal Bank now under construction in Cuba, one at Santiago and the other at Camaguey. The one at Santiago is an eight-cage and that at Camaguey a five-cage bank. These fittings are made complete in Chatham, then taken down and boxed for ocean shipment. They include mahogany woodwork, metal work, special hardware, marble, glass, etc. To meet tropical conditions they are made vermin proof, and are complete in every detail. In the case of the mahogany fittings they must be made of this wood throughout. That means that even the cores of the plywood must be mahogany. The reason is that this wood is not attracted by tropical insects the same as most northern woods.

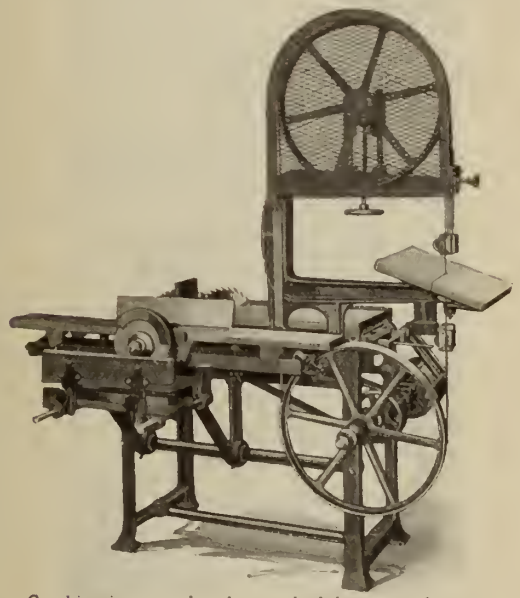
Standardizing Door and Window Openings

The committee of simplified practice of the U. S. Department of Commerce are recommending the elimination of from 20% to 30% of the present sizes of sash and doors. This, they maintain, would not limit the selection of architects and builders to any appreciable extent and would greatly facilitate production. It is said that panel doors are now being made in some 35 sizes; window sashes in 200 sizes; sash doors in 10 sizes and French doors in 15 sizes.

Machinery & Equipment

Improved Combination Woodworker

The improved combination woodworker being placed on the market by the Buffalo Forge Company, of Buffalo, N.Y., has a number of new features. Chief among these is the change in the planer guide arrangement providing for quicker, simpler and more accurate adjustment and the introduction of a positive drive for ripsaw and jointer mandrel through a

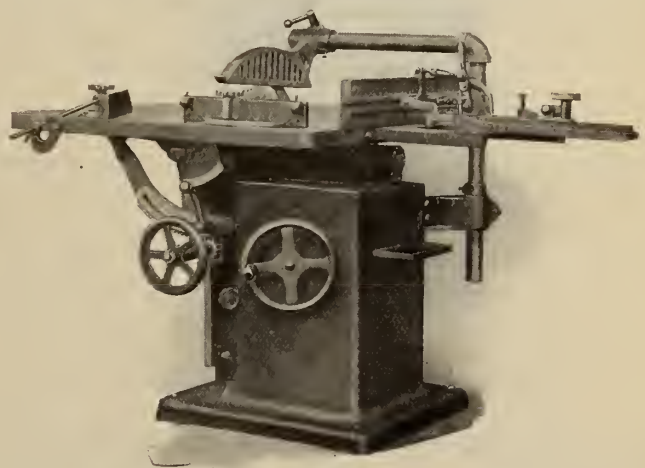


Combination woodworker embodying new features

rawhide pinion and gear. The new planer guide arrangement consists of a slide whereby the planer guide is moved forward and backward in a slot or groove. This guide is locked in position by means of one thumb nut. It can also be set at any angle for bevelling purposes. Other features consist of tight and loose pulleys and a handy belt shifter. The drive shaft is 1" in diameter and runs in 4" babbitted and reamed bearings, split for adjustment. In addition the pulley for the jointer and the lower bandsaw wheel are also connected to this shaft by means of jaw clutches. This means that different parts of the machine may be run independently of each other with resulting saving in power and wear on bearings. The table for the cross-cut saw and rip saw is 37" long by 15" wide of heavily ribbed cast iron. The saw mandrel is 1-1/16" in diameter. The saw, 10" in diameter is driven at a speed of 3,000 r.p.m. and will make a cut 2¾" deep. The jointer, fastened on the same spindle as the saw, is 6" long and 3" in diameter. The tables are 6" wide and 24" long each, allowing for very accurate work. The jointer shaft has an outer bearing and outside of this an 8" by ¾" emery wheel may be attached by means of two collars and a nut. A half inch reamed hole in the shaft end and a tap for a headless setscrew allows straight shank bits to be inserted. In order to facilitate holding work to be drilled, a slide table is provided which is readily adjustable to different heights. An 18" disk sander may be placed on the lower bandsaw shaft if desired. The bandsaw is furnished with a cast iron tilting table 17½" long and 14¼" wide. This table may be locked in any position by means of a positive action cam and handle. The bandsaw wheels are 22" in diameter with a 1½" face. The frame of the saw is made of cast iron in an H section. The saw throat is 21½" deep. The guide is readily adjustable for materials up to 7 inches thick. The drive shaft of this machine may be attached to an electric motor or gas engine. The maximum power needed is about 1 to 2 horsepower for the bandsaw and up to 3 h.p. for the rip saw depending on capacity and feed. The drive shaft should be run at about 700 r.p.m.

New Variety Saw

A new addition to the Yates line in the shape of a general purpose variety saw is shown in the accompanying illustration. This machine is designed to meet the requirements of furniture factories, woodworking plants, and other shops where a wide range of work, including heavy cutting, is done. The base is extra heavy with a wide flange at the bottom which tends for solidity and the elimination of vibration. The arbor, which is of crucible steel, is 1½ inches in diameter and turned down to 1⅛ inches where the saws are applied. Unusual care is taken in making this arbor to insure a smooth running saw. The steel is turned to size and then seasoned before being ground to the finished diameter. The table is of



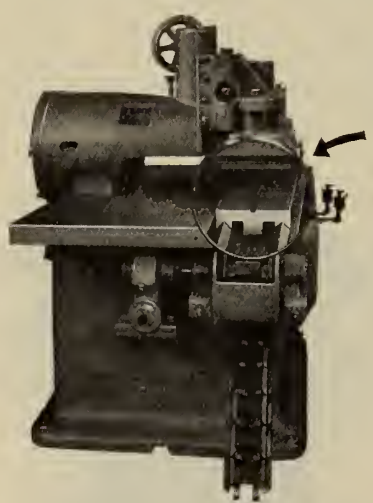
Variety saw recently placed on the market by P. B. Yates Machine Co.

sufficient size to handle a wide variety of work. It is 38 inches x 44 inches exclusive of the extension table. It is raised and lowered by a hand wheel conveniently placed on the front of the machine. The tilting device is simple and positive in its action and a quadrant scale is provided to indicate the angle or level. The ripping gauge is held in place by two tapering pins and a hand knob. This results in quick adjustments. A handy tilting device has been applied which assists in various forms of special cutting. The

mitre or cut-off gauges are designed to take a steel rod with a stop gauge. In addition a quadrant scale is laid off to locate the various angles. If desired this machine can be had with a boring and mortising attachment. One special feature that is worth more than passing notice is the way in which the saw is guarded. The lower part of the saw is covered by a large dust hood which gives protection to the operator. In addition a splitter guard has been mounted behind the saw and, as will be seen from the illustration, a large cage guard is always at hand, so that it is readily available for all forms of work. Further particulars with regard to this new saw may be secured from the P. B. Yates Machine Co. Limited, Hamilton, Ont.

New "V" Type Ripsaw Feed Chain

An original and distinctive feature of the Mattison ball-bearing, chain-feed rip-saw is the new construction of the traveling feed chain. The chain bed is mounted as a unit, entirely independent of the tables. Note that the blocks, of which the chain is composed, are provided with two inverted V-shaped ways. The "V's" of the ways and blocks are carefully machined and hand-scraped to bring their angular bearing surfaces to an exact fit. This construction automatically holds the feed chain in perfect alignment with the saw, without gibs or adjusting screws, insuring absolutely straight-line ripping of all kinds of lumber at fast feeds throughout many years of service. The inverted "V" of the ways prevents any accumulation of dirt or grit to cause undue wear. However, should any wear occur, the "V" shape of the bearing surfaces automatically takes it



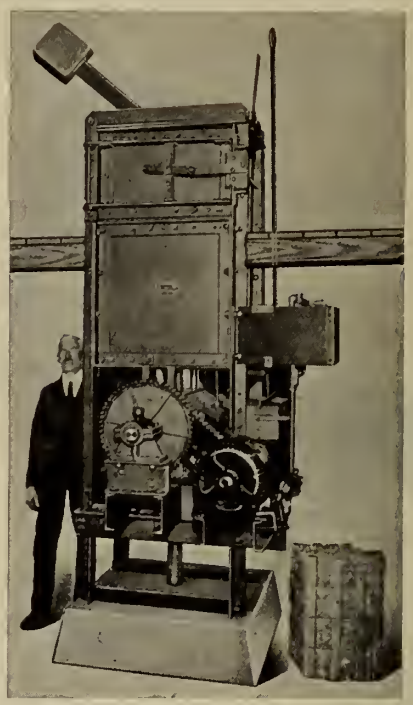
View showing details of "V" type feed chain

up. The bearings of the chain are lubricated through sight-feed oilers, and dust guards are provided to keep chain clean.

The construction of the feed chain itself is worthy of note. Each block is a one-piece, solid casting, having a serrated face which aids in propelling the lumber through the machine, yet it is so designed that the stock is not marred. The blocks are hinged together by means of steel studs held in place with cotter pins. This construction is superior to the old method of fastening the blocks to a separate chain with bolts and nuts. It is a stronger chain, and much more durable; and there is no tendency for a block to become loosened and cause the stock to lead away from the saw.

Power Shavings Baling Press

The Climax Steel Shaving Baler is made of heavy structural steel plates angles, and channels riveted and bolted together so as to stand the heavy pressure without getting out of order. As will be seen from the accompanying illustration it is designed to be erected on a concrete foundation, the top of Baling Case for filling, to extend to the floor above and is operated by one lever from this floor. Shavings are usually blown in at top of building and the press is



Climax Baling Press. May be had in either motor or belt drive

fed by means of a swinging box or hopper, but a great many mills shovel the shavings into press from storage bin. The plunger forces the shavings up by means of a 3" elevating screw and the shavings when baled come out at the top. It is powerfully back-geared with large bevel gear and steel pinion. The electric motor, 5 h.p., is directly connected by chain drive transmission. This press is equipped with an automatic safety power shut-off, both going up and coming down, so that when sufficient pressure has been exerted on the bale the power is automatically shut off. Belt drive may be had if desired, making it fool-proof, no possible chance for damage to press motor or operator. One filling and one compression will make a complete bale. The baler will press a bale of shavings a minute, but about 200 finished bales per day, is the average capacity which depends on the operator. A bale of wood shavings weighs 65 to 75 lbs. This machine is manufactured by the Climax Baler Co., Hamilton, Ont.

The back of a saw tooth has very little effect on the cutting of the tooth, providing it is below the sawing line. It should be felt just below it to allow the front to have a good rake without weakening the tooth.

Upholstering and Trimming

Modern Upholstering Plant

Recently Completed Chicago Factory Model of Its Kind—Work Thoroughly Organized and Systematized

One of the most important considerations in planning a factory is efficient lighting, both natural and artificial. Comfortable workers are those working under conditions that permit of doing the best work with the least fatigue. Men and women working under a strain of any kind become fatigued sooner than they should. If a room in a furniture factory has windows along one side and no other light is provided, it will usually be found that the farther the workers are away from the light the less work they will produce, and the more fatigued they will be at the end of the day. Too much light wrongly placed is fully as detrimental as too little light.

The Valentine-Seaver Co., Chicago, recognized the importance of securing proper illumination when planning their new factory, now completed and in operation, and their plant today is probably one of the best examples of efficient lighting in the industry.

Officers of the Valentine-Seaver Company realized that good light was particularly essential in the cutting and sewing room, as well as in the upholstery room, where great quantities of velours and tapestries are used, and where it is necessary to have the very best light possible in order to detect any possible flaws or imperfections in the weave or shade of color before they went into work.

Even Distribution of Light Secured

The company before deciding on the lighting installation, made a number of tests with various makes of lamps and finally decided on the Western Electric lamp No. 99, as being best suited for the purpose. This lamp is made of opaque glass which entirely encloses it, making it nearly dust-proof and allows the light to penetrate in all directions. This lamp lights the ceiling perfectly, which again reflects the rays in all angles. This light is so diffused that there is absolutely no glare and by actual tests made by the company it was found that the distribution of light is more even than with any other fixture which was tried out in the experiment.

The concrete advantages accruing to the company because of its careful and painstaking care in deciding upon the proper lighting installation in its magnificient new plant are: (1) greater accuracy in workmanship; (2) increased production; (3) less eye strain; (4) better working and living conditions; (5) greater contentment of workers and (6) order and neatness in the plant.

The lighting system, important as it is, is not the only feature of this new plant which stands out prominently as one of the most modern in the country in design, equipment and system. Every detail pertaining to efficient furniture manufacturing has been given the same careful attention. From basement to the fourth floor, the plant is so arranged as to insure the maximum production and the least lost motion, from the time the lumber and filling material is received until it goes out in the shape of the fabricated article.

All Phases Thoroughly Organized

Taking up the interior in detail, the ground floor is given up in part to the mill room, or what is generally known as the cutting-up department. From there parts destined for frames go to the top floor, where assembling first begins. At the same time an order for the fabric to be used is started on its journey to the sewing room, where skilled operators cut and sew the handsome and high-priced upholsteries for the pieces under construction, then going to the upholstering department, there to meet the partly finished patterns which they are intended to grace. In the making of the former the gluer, the sander, the finisher, the webbing man, the spring tier, the upholster and the coverer all play their important parts, each unit contributing a share of the building-up process which means a perfectly made whole.

There is absolutely no guesswork about the method of procedure. Not only does close inspection prevail, but just exactly what is to be utilized is known to a certainty. On each order there is the same quality of hair, moss or other pre-determined filler; the webbing is exactly like that on the companion pieces; just a certain number of tacks are driven to hold this webbing securely in place; and the springs are tied to follow specifications worked out to the last detail.

Piece Rates Using Coupon System

Once in awhile, as happens in every plant where piece-work system prevails, there are arguments concerning differences between workers' tallies and those of the accounting department. By introducing a system of coupon tickets, this has been entirely done away with. While to explain the method followed so as to make this understandable is not easy, the plan sums up that when a piece is completed the workman simply has to tear off a coupon, which on payday is converted into money—his wages. The plan works out that to employes it presents a certainty beyond question of receiving full compensation for services rendered. Practically fool-proof, it is equally cheat-proof, the cross-checking making any mistakes in payment to other employes out of the range of possibilities.

After the tickets are received by the company, it is necessary that on these be stamped the price paid. Until this is done they are valueless, a special machine doing the work of imprinting the agreed upon figures. Each ticket bears a serial number at the top, the same number appearing on the coupons. This makes identification an easy matter.

When the wood parts begin their journey, a ticket

is tacked to the frame, remaining there until the work is entirely completed. However, as it passes from one department to the other, each operator who handles it removes the coupon to which he is entitled. These coupons go into books made for the purpose, so that by checking up each employe knows exactly what he has earned as well as the satisfaction of knowing that his tally and those of the paymaster will exactly agree.

Work Inspected at Frequent Intervals

Practically every man is a specialist in this company and does just one thing. The goods move in an orderly fashion from the moment the raw materials are received into the plant until they emerge as finished articles. At frequent stages in the process, sidings are provided where inspectors critically examine every piece after it has undergone a specific operation and if there is any flaw in workmanship it is sent back for correction. There is no congestion at any point. Every man knows his job and is held responsible for doing it right.

In the unloading of raw material, a lift carries the lumber direct to the cut-of saw, doing away with much in the way of extra handling. Heavy fabrics and filling materials find their way from the receiving platform to the basement storage rooms by means of a steel slide, the idea kept paramount at all times is to reduce operations and eliminate handling, automatically doing away with the extra costs growing out of this.

Ventilation and heating have received especial attention. The system installed keeps the air free from dust and moisture excess, while the heating system is exactly the opposite of most of these. Instead of the warm air going first to the ceiling, in the Valentine-Seaver plant it is forced to the floor level and kept in circulation there. This means an enormous saving of heat energy, and steady, comfortable temperature.

Waste Kept Down to Minimum

In material purchase the same rigid regard for buying nothing likely to be productive of waste is observed. Several kinds of manufactured lumber are used, but no grades lower than firsts and seconds considered. It is the unwritten law of the factory that every frame must be clear of defects, and if other than the best were taken into stock it would mean extra cutting and waste.

The plant is fireproof throughout. The unit heating and ventilating system has been installed which insures a constant circulation of fresh air and adds to the comfort of the employes. A. E. Seaver and L. L. Valentine, the principals of the company, have the satisfaction of possessing one of the finest furniture plants in America, all paid for, the result of long years of manufacturing good goods at the right prices.

Upholstery Class in Factory

The Tomlinson Chair Manufacturing Co., High Point, N.C., is conducting a class in upholstering for young men, working in conjunction with the vocational department of the State. It is expected that the complete registration of this unique school will be approximately fifty men.

J. Wesley Smith, foreman of the upholstery department of the Tomlinson Co., is enthusiastic over the idea of an upholstery school and is of the opinion that it will prove a great success not only for the company but for the young men who are given the opportunity to learn a trade.

Two instructors are employed to teach the students how to upholster furniture. The students are not required to work in this factory without compensation. They are given reasonable salaries while learning the work and increases commensurate with their value.

Officers of the Tomlinson Co. feel that through the establishment of the upholstery school, directed according to the plans laid down by the division of trades and industries of the State Department of Public Instruction, they are doing a real service to the ambitious young men of the city and section.

"Dealer Influence"

The entire advertising world has come to accept what the manufacturing world has long felt—namely, that the key-note of all advertising and merchandising success is predicated on "dealer influence."

From hundreds of competitive products in each of thousands of different lines the merchant must select that assortment of merchandise on which he can build and hold his trade in competition with his fellow merchants.

His service of selection is greater than his service of distribution, for upon his selective ability depends his entire success. He is not a slot machine. He is an independent power, be he large or small, intelligent or ignorant.

If there is anything at all in advertising, then it should work on a merchant as readily as on a manicurist—and it does. And when you have "sold" the merchant, through the "Furniture World," you have automatically sold his customers.

If you don't believe it, spend a half hour in a department or furniture store and see for yourself.

Steel Gliding Caster for Furniture

A new type of caster that is being offered to the Canadian trade is made of pressed steel, heavily nickled. Its shape is like a shallow cup or saucer and it is sufficiently flat on the bottom to give an easy gliding surface without scratching or marking the floors. In addition the curvature allows it to slide easily over rugs and carpets. It is made with a shank to fit in the sockets ordinarily found on furniture so that it may be used to replace the wheel type of caster. For new furniture, standard sockets may be secured as desired. In an attempt to create a demand not only for this "Glide Easy Caster" but for furniture equipped with it, an advertising campaign is now being carried on in various business papers and newspapers. The caster in question is manufactured by the Sanitary Caster Corporation of Newark, N. J., and is being distributed in Canada by G. S. Whittaker & Company, 8 Colborne St., Toronto, Ont.

When moulding parts have their ends moulded, this should be done first: Cramp a number together, then mould them with the spindle, and stick them in the usual manner.

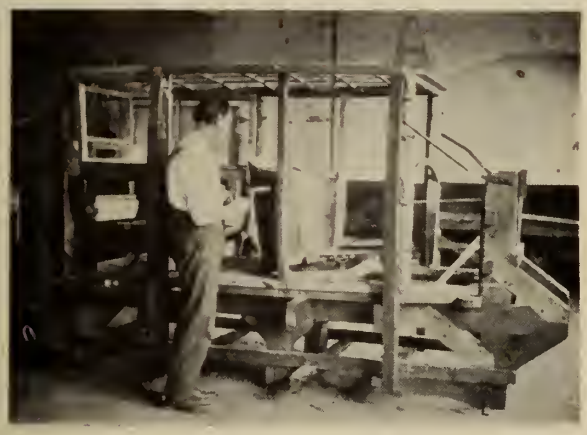
Body Making at Gray Dort Plant

(Continued from page 50)

forms or "jacks" as they are called, are used. The assembling is a series of consecutive operations the first few of which require special forms. In putting the frames together practically all joints are glued and screwed, to ensure permanency and rigidity. The screws used are the Robertson recessed head type which lend themselves so admirably to power driving. After the frames have been assembled the panels are nailed on, the doors attached, the finishing touches completed and the bodies are away to the finishing or painting departments.

Priming Coats Run on With Hose

The priming coats are applied by what is known as the "Flowco" system. Under this method the priming material is flowed on in a stream through a special fan shaped nozzle. The material runs down and drains into pans which conform to the outline of the body. The Flowco units consist of a container with electrically driven pumps which force the



Considerable work is involved in assembling a closed job. Here again special forms are used

paint through the hose to the nozzle. The material drains to the container passing through a strainer on the return. This method ensures a flat smooth coat, one that does not require very much sanding. The bodies are handled on special trucks which conform to the height of the stands upon which the final assembling operations are performed as well as to the stands in the finishing room. The final finishing coats are flowed on by hand.

Some idea of the production attained in this department may be gathered from the fact that with a staff of 80 an average daily output of 82 bodies has been secured. Of course this would vary depending entirely on the type of body going through. Such an output could hardly be expected on, say, sedan bodies.

The Gray-Dort plant occupies three large buildings located some few blocks apart. The body plant is in the main or original building. Behind this is an imposing structure bearing a sign which reads "The Gray-Dort Club." This building was remodelled and furnished by the Gray-Dort Company as a social centre for the employees. It is available at all times for dances, banquets and other social gatherings. The furnishings are complete in every detail even to the spacious well equipped kitchen. The large dancing or banquet hall will accommodate several hundred couples without crowding. This is a gift that is much appreciated by all.

FISCHMAN
TRADE MARK
SPRING COMPANY

Quality Spring Goods

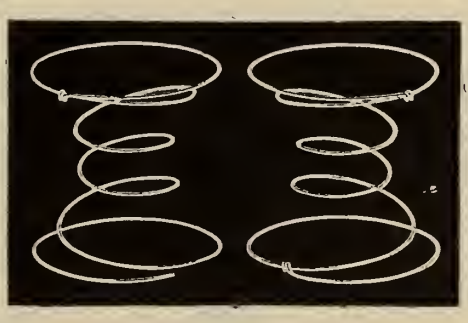
for the Manufacturer and Upholsterer

Fischman Ventilated Spring Mattress.
Fischman Ventilated Box Spring.
Fischman Ventilated Combined Box Spring and Mattress.
Fischman Ventilated Spring Pillows.
Fischman Spring Upholstering Cushions.
Fischman Upholstering Constructions.
Fischman Spring Rosettes.
Fischman Ventilated Chair Pads, Etc., Etc.

Fischman products enjoy an enviable reputation for consistent high quality in all lines. They are the choice of manufacturers and upholsterers who take pride in the superior construction of their furniture. Get our prices.

Fischman Spring Co.
KITCHENER — ONT.

"IDEAL"
FURNITURE and UPHOLSTERY
SPRINGS



Double or single cone, plain or knotted ends, in any height, shape or gauge of wire.

All "Ideal" Springs are made of "Premier" Brand—the best steel spring wire obtainable. Before shipping, the springs are japanned and heat-treated, giving an enamel finish and making the spring more resilient.

Catalogue and prices on application.

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Stains are properly judged by the time required to obtain the desired results with them. The price is a secondary consideration. Maco stains cost more but justify their cost by the savings effected in the finishing room and by the results.

Wet samples furnished on request

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P. S. We also make stains and varnish.

A Better FINISH

You can improve the appearance and durability of your finishes and increase the saleability of your furniture by using

Cosmos High Grade Lacquers and Lacquer Enamels

Lacquer gives a permanent, waterproof surface that is tough and durable.

It dries rapidly, increasing the output of the finishing department. Successive coats may be applied at half-hour intervals, enabling work to be finished in one day.

Samples, prices and other particulars gladly furnished.

Our Specialties:

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Port Hope **Ontario**

"Is Price the Only Factor?"

Suggestion to Retail Dealers Has Wider Application

By J. A. Addison

A prominent furniture manufacturer, in advertising his line to the retail trade, begins one advertisement with the question, "Is price your only sales argument?" The advertisement then goes on:—

> "There are many lines of merchandise in which price is the only sales argument. Some lines of goods are standard in quality and analysis, so that price is practically the only argument possible, except that of service.
>
> "But in furniture, as well as in practically all lines of house furnishings, many factors are more important than the price, so that the price argument alone is insufficient. It is, undoubtedly, unfortunate that the price is often the only sales argument employed, when the more important factors of value in design and construction should be the basis of satisfactory selling.
>
> "Price is a good sales argument, but it never should be the only argument. It should not be used unless the price is the only factor to consider. Honest merchandise at fair prices, placing the argument on the merit of the merchandise, with the price in relation to the merit of the goods, is good merchandising and good business policy."

While this was intended primarily to stimulate retail sales, does it not contain a pointed message for furniture manufacturers as well? Is it not true that the majority of furniture men seem to overlook the fact that their product has many merits; that it is one which has a strong general appeal, and sell it largely on price and price solely? Certainly price seems to be emphasized in selling furniture to the retailer, in fact this is often carried to such an extreme that prices are often slashed right and left in an effort to stimulate sales and perhaps beat out the other fellow. It might not be going to far to suggest that this sales policy as followed by furniture manufacturers may be the reason why retailers are prone to view furniture in the light of so many dollars and cents and also why they usually stress the price in attempting to make a sale.

A Situation to be Corrected

Then there is another angle to this price question. Furniture is usually made to a price rather than to a standard. Doubtless there are exceptions to this rule but in general an effort is made to cut down here and cut down there, to sacrifice quality to price or in other words the price is kept low at any cost. One does not have to go further than the finishing department to be convinced of this. The proper finishing of furniture and allied wood products is one of the most important phases of the whole manufacturing operation, yet it is doubtful if price or first cost plays a bigger factor in the purchase of any material than it does when purchasing finishing materials. Here again the manufacturers of the product, the makers of varnishes and finishing material, are not without blame for in turn they have met this demand for lower and still lower prices, in fact perhaps if the truth were known they have even encouraged it so as to be able to undersell competitors and walk away with some business, and to this extent have fostered this tendency to buy on price. While this does not excuse the buyer of finishing material for not insisting on quality, it may be that it is a contributing factor to the present state of affairs.

How much better it would be if the makers of furniture were to establish standards or grades of finish and then insist that all material purchased comes up to definite specifications. It stands to reason when one varnish manufacturer asks a certain figure for a definite grade of varnish and then some other varnish man cuts that price ten per cent., and, perhaps a third comes in and offers a still better quotation, on absolutely as good a varnish of course, that quality must have been sacrificed somewhere down the line, that the varnish must have been adulterated with cheap oil or cheap almost worthless gums. It is an old saying, and a true one nevertheless, that one usually gets what one pays for. Certainly one seldom gets more and very often less.

Buyers of Materials Must Act

While certain manufacturers of finishing material are trying to improve this situation and place the buying of finishing material upon a quality rather than a price basis, yet it is a discouraging situation, partly because there are those varnish men who are always willing to sell on price, to cut, and cut, and cut, but mostly because the buyers of such material are sold on the price rather than the quality idea. For this reason it is doubtful if any but slow progress will be made in this direction until the buyers and users of finishing material, the furniture and phonograph manufacturers, the piano and refrigerator men become unanimous in their demand for quality, at as low a price as possible, but quality of a certain definite standard.

There is another factor that may not be without its influence. Present conditions can exist only because both retail furniture dealers and the general public do not recognize the deficiencies in present day finishes and do not know what to expect in the way of a better finish. Should this situation change, should both retailer and consumer become cognizant of the fact that there is considerable room for improvement in the finish of so called modern furniture, it is likely that the demand for better finishing and better finishing material would become so insistent that it could not be denied.

The manufacturers who do not step out of the common trend, who produce an article of merit and

sell it on its merits, will not only become leaders in the industry, but will find that slowly but surely they are building a permanent, non-competitive market that means increased sales and lessened sales expense. Let quality be the dominating factor in the furniture field during the coming year.

Practical Suggestions on Use of Shellac

Discussion of "Blooming" and Its Cause—Suggestions for Eliminating this Trouble—Removing Moisture from Spray Line

By Walter W. R. May*

Within the last few years furniture manufacturers have predicted that soft shellac finishes had come to stay. The age of furniture with the hard "new" look has passed on and soft, dull antique effects obtained by the use of shellac and wax seem to have come. Just how to obtain an antique finish with shellac and wax will be answered in different ways by different finishers, but where shellac is to be used as a building up or finishing varnish, the most valuable hint that can be given is to work with coat after coat of extremely thin shellac. The first aim is not only to fill the pores, but also to preserve or accentuate the grain. But even before this consideration the finisher should look to the material he is working on. If it has been stained it should be perfectly dry. If a water stain has been used this should especially be watched. An oil stain, as a matter of fact, should never be used under shellac and for that reason a water soluble or natural acid stain has become most popular. An expert finisher will watch the dryness of his material because moisture would only be sealed into the wood by the shellac and eventually this moisture must come out. If it is fortunate enough to go out the back way then no harm will be done, but it is has to fight its way out through a varnished surface all round, it is very apt to "fog" or "hydrolyze" the finsh somewhere.

This brings us to one of the most aggravating problems in the use of shellac. It is called "blooming." Occasionally, and this is particularly true where white shellac has been used, the finish will turn cloudy or grey in spots, or entirely, months after it has left the finishing room. This is "blooming." It has been found that such complaints are invariably traced to furniture finished in humid Summer weather or on rainy days, or it may even be due to a complete change of environment for the furniture; for instance, a piece of furniture finished in the North has been shipped to the South where moisture which would ordinarily not be driven out of the wood comes into contact with long dry heat which is bound to draw it out.

Some Causes of Blooming

"Blooming" may develop from other causes. Take, for instance, the beautiful fixtures installed in a new concrete building. This building which is built in the Summer-time does not thoroughly dry out until long after steam heat has been applied during the Winter. Furniture finished and installed in a building of this kind is likely sometimes to develop a haze or bloom which will be months in disappearing unless some first aid is rendered it.

First aid to a "bloom" on shellac finish is not the work for an amateur. Experts are able to eliminate the bloom to some extent at least in the following way: A camel's hair brush dipped in the highest proof alcohol obtainable is worked very lightly over the bloomed portion. This moistens the shellac finish and due to chemical action the haze or white is drawn out. It may be necessary in some instances after twelve to twenty-four hours to rub with some very light pumice stone, soft felt and rubbing oil. Special care should be taken not to use much alcohol. A novice or amateur at finishing is very likely to do this.

A more homely but sometimes more effective method of removing a bloom on an individual piece is to use a heated flat iron, preferably electric heated, applied over a piece of tracing cloth so that it will not stick to the shellac surface. The iron should not be moved around but merely held in one position long enough to draw the moisture from the finish.

Still other finishers have good success in removing blooms by placing the furniture near a moderate, steady heat such as a radiator.

"Blooming" will develop from other causes wherever excessive moisture has been allowed to get in under the shellac finish and sealed in when the shellac dries. One of the most interesting developments in "blooming" was discovered when spraying machines were used on furniture or shellac finish woodwork. The shellac itself was guaranteed pure and made with the highest proof alcohol. The weather was perfect apparently, but in tracing the bloom back to its source it was found that the air pump working in connection with the sprayer forced considerable moisture into the shellac as it was being applied. By driving this air through dry cotton or similar absorbent filler in the air shaft enough moisture was removed from the air before it reached the shellac to eliminate the "blooms" that originally developed.

How Blooming May be Reduced

"Blooming" can be reduced to a minimum and perhaps entirely eliminated if the following simple rules are followed in working with shellac on dark woods:

1. Be sure to use kiln-dried wood. If a veneered finish is used see that both the veneer and the wood under it are kiln-dried.
2. See that veneered surfaces are also not shellacked until all glue moisture has been driven out by kiln heat if possible.
3. See that the water stain is dry. Never use oil stains. If possible, never shellac and stain on the same day, particularly on dark wood.
4. Never apply more than two or three coats of shellac the same day and keep them thin. In French polishing where the shellac is as thin as water, any number of coats may be put on provided the preceding coat is thoroughly dry. If the preceding coat is not thoroughly dry it is merely being rubbed up again.
5. Dry with artificial heat all the year round.
6. Never rub down shellac with water, always use oil. Water can seep through a crack at the edge of a panel or drawer and work back under the varnish. A white or blooming spot on any surface is not al-

*Service Manager, William Zinsser & Co., New York.

ways due to conditions right under the spot itself.

7. If a pump or spraying machine is used see that air for the air pressure is dry or dried in passing through the pump and sprayer.

Saving $5,000 in Finishing Department

Greater Attention to Handling Will Return Nice Dividends—Securing Active Co-operation of Employees—Equipment Big Factor in Finishing Room Costs

By R. A. Spracklin

There are many ways in which the output of the finishing department can be speeded up and finishing costs reduced. In this respect the work of this department differs from that of other divisions of the plant. In the machine department, for instance, there are numerous constant feed machines, such as sticker, planer, drum sander and similar equipment. If the operator keeps the sticker feeding steadily the output is governed entirely by the feed of the machine. While this may be increased within certain limits, the quality of the work becomes a limited factor. In the finishing department, whether the operation be a machine or a hand one, the output depends almost entirely on the ability of the operator and his willingness to apply himself and upon the efforts made to eliminate unproductive handling and reduce all handling time to a minimum.

For this reason the problems of the finishing rooms should perhaps be approached from a different angle. Routing for instance becomes of prime importance. Considerable time is wasted and a certain amount of confusion created due to the way in which work often crosses and recrosses the finishing room. This is one department in which straight line production methods and the shortening distance the articles must be moved from operation to operation can be made to pay real dividends.

Human Element Important Factor

In addition to this, because the operators play such a big part in determining the output of this department the human factor is one that should receive every consideration. Anything that can be done to improve the spirit or morale of the finishers, that will result in increased loyalty and closer co-operation or in closer application to daily tasks cannot help but be reflected in lower finishing costs. This may have to do with improved working conditions, better light and ventilation or with the introduction of an incentive or bonus system. Whatever it is, if it improves the morale of the finishing department it will have immediate and gratifying results.

In this connection some figures recently issued by the Forest Products Engineering Co., Chicago, pertaining to work done in the finishing department of a plant manufacturing kitchen cabinets may prove of interest. This outlines how savings, which on a normal output shows economies in excess of $5,000 annually were effected. This report which explains in detail how these savings were made is as follows:

How These Reductions Were Secured

These savings were brought about by the following:

1. Installation of Basic Time Standards in the finishing department which resulted in lower operating times and which created an incentive for maximum output from the workmen, based on what they should produce.

2. The use of the spray for applying all finish costs except stain and filler. Previously only the shellac and primer had been sprayed, all other finish costs being brushed. These savings could be increased through spraying stain instead of brushing, but the capacity of the spraying equipment is limited and the purchase of additional equipment is not advisable at this time.

3. The reduction in handling time brought about by the following improvements:

(a) Trucks for moving kitchen cabinet tops and bases from the various bays to the spray machine and to the drying kilns.

(b) Performing all sanding operations on the parts while they are piled on the trucks, thus entirely eliminating all handling at this operation.

(c) Performing all finishing operations on drawer fronts with the drawers in the cases, requiring practically no additional time. The drawers are pulled out approximately ½ inch, permitting the spraying and sanding of the case almost as fast as though there were no drawers. This also saves the large amount of time previously required to locate drawers and cases by serial numbers.

(d) Use of a chute for delivering the finished cases from the finishing department to the warehouse on the floor below.

(e) The use of special fixtures and racks for handling the smaller parts such as doors, table legs, etc.

In explanation it might be said that rubbing does not enter to any great extent in the finishing of kitchen cabinets otherwise it is safe to assume that mention would have been made of the economies that could be effected in rubbing operation through the use of modern rubbing equipment.

Comparative figures showing reduction in finishing costs secured as a result of an installation of Basic Time Standards. The cabinet in question is representative of the entire line.

Finishing 100 No. 147 Tops	
Labor costs taken from cost records	$75.77
Overhead figured at 75%	56.82
Total Previous cost	$132.59
Labor costs based on Basic Time Standards	$25.40
Overhead at 75%	19.05
	$44.45
Saving per 100 tops $88.14 or 73%	
Finishing 100 No. 147 Bases	
Labor costs taken from Cost Records	$34.84
Overhead at 75%	26.13
	$60.97
Labor Costs based on Basic Time Standards	$14.60
	10.95
	$25.55

Saving per 100 Bases $35.42 or 57%.

The total savings per 100 kitchen cabinets amount-

ed to $123.56 or 64%, which calculated on a normal yearly output of 5,000 cabinets represents a total annual saving of $6,178.00.

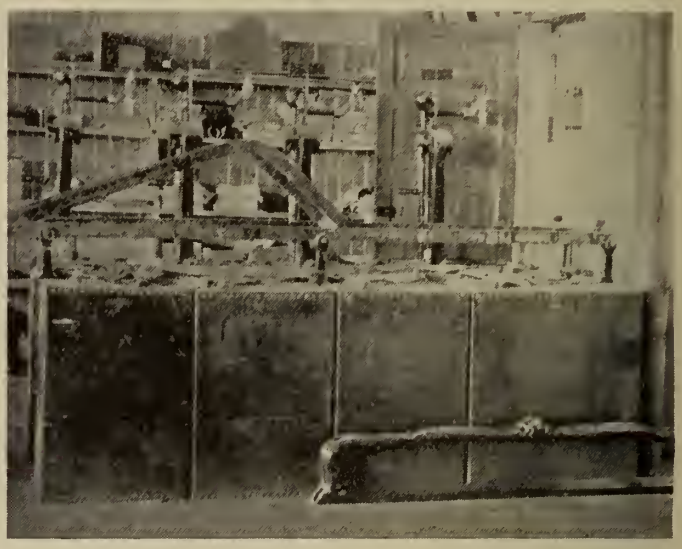
Handling Materials to Better Advantage

More and more attention is being given in Canadian plants to the proper storing of finishing materials. This is due largely to a realization of the fact that in the past much valuable finishing material was wasted because of the way these materials were stored and handled and because in addition a fire hazard was created that constituted a permanent menace to the whole plant. Another point is the time that was lost by finishers in securing their supplies of the sematerials. Of course these conditions still prevail in many plants but the trend is toward better methods and modern storage equipment.

A view in the finishing room of the main plant of the Knechtel Furniture Co., Hanover, Ont., is shown in the accompanying illustration. This shows a battery of storage and measuring tanks, for varnishes, oils and similar materials. Other tanks of this type are to be found conveniently located in other parts of the same plant.

With such equipment the supply of finishing material may be located convenient to the operators, conserving their time; waste and deterioration from evaporation is eliminated and the loss from leakage and the overflowing of utensils is practically done away with.

The self-measuring feature of these tanks is not without its practical value. Not only can predetermined quantities be drawn off, without slopping or dripping, but the contents of incoming barrels can be checked as to full measure. An instance of this kind is where a barrel was found to be twelve gallons short. As the material was worth $2.50 a gallon this represented a direct saving of $30.00.



Battery of self-measuring tanks in finishing department of Knechtel plant at Hanover

In addition to cleanliness and economy, the reduction of fire hazards is a most important consideration. The highly inflammable materials employed in the finishing department cannot be safeguarded too thoroughly. Tanks of the type illustrated are endorsed by the Canadian Board of Fire Underwriters and are to be found in numerous other plants.

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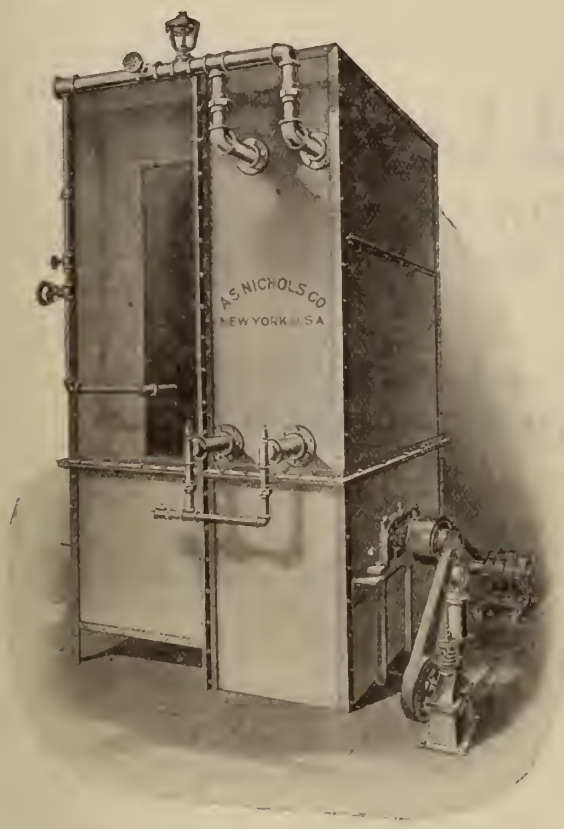

A Logical Conclusion

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Veneers and Panels

Checks and Their Prevention

Hygroscopicity of Wood Cause of Most Trouble—Suggestions Tending for Better Veneering

When we come to analyze it, wood has some peculiar properties. One of these is that it can be compressed but not stretched. It will swell some by the influence of absorbed moisture, and shrink again when the moisture evaporates, but if we undertake to expand it by mechanical means it will crack. That is why we have face checks in veneer and sometimes in solid lumber. There is a fastening down or a holding in some expanded dimension while moist, then a drying out which calls for a shrinking together, and this being prevented, there is a resulting rupture of the grain which we call cracks or checks.

It looks as if we might manage in some way to take advantage of the fact that we can compress wood as a means of preventing cracks. By applying moisture and heat we can put it in shape for compression. It is in this way that we make bent woodwork, because bending is a process of compression endwise. We can demonstrate the compressibility of wood other ways too, and with almost any wood we can by the application of heat and moisture put it in shape so that with pressure we can compress it. And if we confine it in this compressed shape until it is thoroughly dried it will tend to remain so until it takes on moisture, after which it tends to expand to its natural dimensions.

A Possible Solution

The thought here is that if we could confine woodwork in presses until thoroughly dry, we could get rid of a lot of face checking trouble. And some day we may find ways and means to do this. Meantime the difficulty is that when we put a mass of built-up wood under pressure it is a handicap to its drying out. We can take a press full of panels, and in order to get them dry we separate them as soon as the glue is thoroughly set and pile them up in cross strips so as to let air circulate around the surface to carry off the moisture.

If we had a series of cauls with which to build up our work in the presses which would permit air circulation through the mass while still retaining it under firm pressure, and would keep all bundles tightly clamped until thoroughly dry, the chances are that many of our veneering troubles would disappear and there would be very little complaint about face checks.

As it stands today a prolific cause of face checks is the spread of the glue which is necessary in building up plywood and putting on face veneer. The moisture in the glue enters the veneer, produces expansion before it can be gotten under pressure, and in the final drying out there is a tendency to shrink up and this results in cracks. Some seek to mitigate this trouble by applying the glue to the core body instead of the face veneer and then getting it under pressure quickly after the veneer is laid on the glue surface. This helps but it interferes some with quantity production. So we are still wrestling with the problem of how to get quantity production in the use of face veneer and at the same time prevent face checks which result in the expansion, incident to glue moisture in the progress of gluing.

Handling Wrinkled Stock

Some day we will find the right answer but meantime prevention of face checks is largely a matter of intelligence and persistent care and attention in the process of gluing.

Every veneer user has some wrinkled and crooked veneer to contend with. And ofter the finer the veneer and the more striking the figure the more wrinkles are in evidence. There are reasons and explanations for this, but that does not of itself prevent or cure the wrinkles. Wrinkled veneer is so commonly encountered in the dry stock which comes to the user's hand that if he should get a lot of thin figured veneer flat and smooth without wrinkles, he would likely be suspicious that it was not thoroughly dry and needed some drying out before using.

The problem of how to best manipulate wrinkled veneer has been the subject of considerable experiment and discussion. Ideas and ways differ in detail, but most of them are founded upon the principle of applying a little moisture to make the veneer plaint, and then applying pressure between cauls of two flat surfaces to straighten it out. This is the basic principle of straightening wrinkled veneer and the details are in the main governed by local conditions and personal inclination.

The main trouble with it all is that the addition of moisture to wrinkled veneer, so as to make it plaint that it may be flattened out without breaking, usually causes some swelling and if it is used this way in the final drying out and finishing off it may show up with some face checks. Fine checks of this kind would not hurt seriously in fillers or in cross-banding; therefore there need be no hesitancy in applying moisture followed by pressure in straightening cross-banding and plain veneer.

When face veneer is moistened to flatten it out then the moisture should be gotten rid of before it is glued down, which means that it must be kept flat and at the same time be made thoroughly dry and permitted to shrink. There are fine points here as to how much one may limit the moisture content added to make it plaint enough to flatten out without breaking. Heat helps some and by using heat or creating it in moisture, say in the form of a steam jet, one may get a combination of heat and moisture which will render it plaint with a lower moisture content and thus help out considerably.

One good use in practice is that of using board

cauls of a soft porous wood and having the cauls hot. Moisten the veneer over a steam jet and clamp it between the hot boards, which are thoroughly dry and they will take the moisture out of the veneer as well as press it flat.

A modification of this idea of clamping of veneer between two flat boards that are heated is furnished in the old hot plate dryer in which metal plates are heated with steam. Also a modern carrying out of the idea is found in the redryers of today, which are built specially to insure thorough dryness by redrying, and which should in the process of redrying bring about that order of perfect flatness necessary to satisfactory work.

Mechanical Redrying

Undoubtedly, where there is volume enough used to justify the redryer, it is the logical thing for straightening out wrinkled veneer and insuring thorough dryness. Where smaller quantities are used there are many different schemes and plans. Most of them start, however, with the using of warm dry boards between which, sheets of veneer are clamped, and from this branch out into a general scheme of using a combination of moisture and pressure, either applied to single sheets or to quantities for getting the results.

After following the experiments and discussions pertaining to this subject, one gets an impression that probably not enough attention has been given to packing and caring for veneer in such a manner as to keep it dry and prevent wrinkling and cracking. Here as in troubles generally a little prevention may often be worth more than a lot of cure. So while we are seeking to improve ways and means for flattening out curled veneer let us give a fair share of attention to the matter of prevention. When veneer comes from dryers it should be flat as well as dry. And even when it is dried in kilns or in hot rooms by suspension and becomes wrinkled in drying, it should be practical to so pile and store it that it will be flat and straight as well as properly dry when the times comes to use it. So let us seek prevention as well as talk about ways and means for straightening out wrinkled veneer.—Furniture Manufacturer and Artisan.

Multiple Panels for Box Stock

An interesting idea on future possibilities of plywood box making was brought out one day in a talk with a machinery concern which had a foreign customer buying equipment to make plywood in what it termed slab form.

The idea as outlined by the machinery men was to use a standard dimension of slab which could be cut up into certain types or sizes of box and work out right the original plywood veneer being put up in slab form and converted into boxes at the box factory near the point of box demand.

Veneer in the form of plywood has made enough progress in the packing industry in this country to make effort toward standardization worth while. There are many large boxes in which a single piece will be as large a dimension as can be economically made in plywood, but there are many other smaller boxes which could be made from large slabs. And in the course of time we will discover that it will be practical to take certain standard sizes in sheets and slabs of plywood and make them serve a number of different kinds of boxes with a very small percentage of waste.

The older countries seem to be setting an early example in this, perhaps partly because they have always followed the practice of getting out lumber and other timber products in large dimensions at the mills and reworking at the point of consumption. We do that here to quite an extent with standard lumber, but even in this there is now a tendency toward reducing everything to specific dimension for certain consuming purposes right at the producing plants. This is well and though it seems an opposite idea to that of producing plywood in slab units it is really a different thing.

The real idea back of developing slab unit standards is that of economic production and distribution of veneer in the form of plywood to box factories. The veneer can be made up into standard slabs at producing plants which would be convertible into several different types and sizes of boxes with very little waste. And to the extent that we can develop this it will improve the possibilities of cutting up box material in slab form ahead of needs and getting it on a basis comparable with that of lumber and shooks.

Case Goods Moving Slowly

"Business in case goods seems to be more affected than other furniture lines, the fall demand being rather disappointing," writes one furniture manufacturer. "We do not see any indications of a resumption of buying on a permanent basis for several months yet.

"It seems that the consumers are short of money, though there is plenty of work. We think that the automobile craze is draining the surplus money from the hands of the customers to the detriment of general commodities that would help improve the home, making it more attractive, such as nice furniture for the bedroom, dining room, or living room. The same may also apply to many other important articles of other industries."

Sawdust for Cattle Food

The old joke about deceiving the cow by placing sawdust for bran seems likely to become a very serious proposition. Some time ago the Forest Products Laboratory at Madison, Wisconsin, discovered that by treating sawdust with diluted sulphuric acid, which was afterwards neutralized by lime, a very satisfactory cattle feed resulted. After the lime and acid have been eliminated there remains a soft, bran-like food containing about 15 per cent. of water and rich in sugars. The laboratory experimented on three cows, who confidingly ate the modified wood that was fed to them and justified their faith by putting on fat and giving more milk. The Department of Agriculture is now experimenting with several hundred cattle in various parts of the country with a view to confirming the Madison test. Immense quantities of sawdust are wasted at present because there is no way of using it economically. And if wood cattle food can be produced cheaply enough there will be a big market for it.

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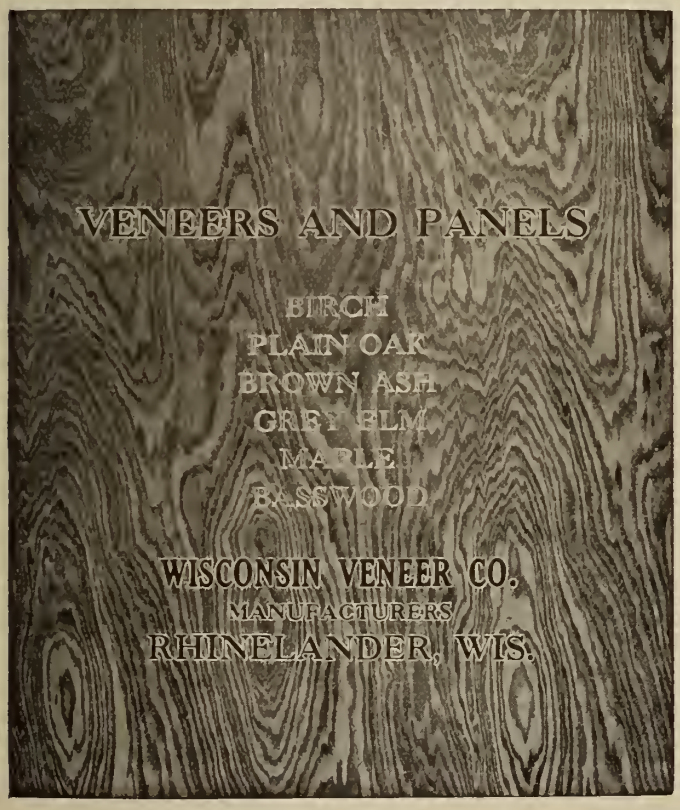

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Plywood Makers Hold Annual Meeting

Question of Grading Rules Receiving Attention—Uniform Telegraph Code Adopted

The Plywood Manufacturers Association recently held their 23rd annual meeting at the Auditorium Hotel, Chicago. Sixteen manufacturers were represented. Various phases of the association activities were discussed including the cost work of Cost Engineer Potter. It was urged that increased interest be taken in the work of this department. It was brought out that practically all plants represented had sufficient orders on hand to take care of production for the balance of the year.

E. V. Knight, chairman of the Plywood Promotion Committee reported that plans were being formulated through the Better Homes Bureau and it was believed that good publicity could be secured at a nominal expense.

An address was delivered by J. M. Pritchard, secretary of the Hardwood manufacturers Institute on the work of the institute, dealing chiefly with their grade rules and statistics. He paid particular attention to their importance and to their use.

The question of grade rules came up for discussion and a committee of three representing the Plywood Manufacturers Association, Wisconsin Plywood Club, and the National Hardwood Lumber Association were appointed to go into the grading rules thoroughly and recommend any adjustments or revisions that were found to be advisable.

The committee which had been working on a "Telegraph Code" submitted a code applying to stock panels that was adopted after some study and discussion. For the present, at least, this applies only to members of this association, but doubtless it will tend to come into general use as the need for a simple, common code has been felt for some time. The code as adopted at this meeting is reproduced in full.

Telegraph Code as Adopted

	Inches.		Inches.		Inches.
Back	24x48	Call	30x48	Dandy	36x48
Bear	24x60	Certain	30x60	Debt	36x60
Big	24x72	Cinch	30x72	Diamond	36x72

Yard	three-ply	1/8-in.	Warm	five-ply	3/8-in.
Yellow	three-ply	3/16-in.	Wear	five-ply	7/16-in.
Yield	three-ply	1/4-in	Web	five-ply	1/2-in.
Youth	three-ply	5/16-in.	Wedge	five-ply	9/16-in.
Yucca	three-ply	3/8-in.	Wild	five-ply	5/8-in.
Wage	five-ply	1/4-in.	Wing	five-ply	11/16-in.
Walk	five-ply	5/16-in.	Wise	seven-ply	3/4-in.

Economy ..... Any reject, 2S, not sanded
Elect ..... Birch, G1S
Elephant ..... Birch, G2S
Elevator ..... Birch drawer bottoms, not sanded
Elk ..... Birch drawer bottoms, S1S
Embargo ..... Ash, G1S
Empire ..... Ash, G2S
Enamel ..... Basswood, G1S
Endorse ..... Basswood, G2S
Engine ..... Basswood trunk stock, not sanded
Enough ..... Basswood trunk stock, S1S
Escape ..... Elm, G1S
Eskimo ..... Elm, G2S
Estate ..... Elm drawer bottoms
Exact ..... Maple, G1S
Exchange ..... Maple, G2S
Exclude ..... Maple drawer bottoms
Occur ..... Yellow pine, G1S
Ocean ..... Yellow pine, G2S
October ..... Yellow pine drawer bottoms
Nag ..... Qtd. sawed white oak, G1S
Nation ..... Qtd. sawed white oak, G2S
Navy ..... Qtd. sawed red oak, G1S
Narrow ..... Qtd. sawed red oak, G2S
Nature ..... Sliced qtd. white oak, G1S
Name ..... Sliced qtd. white oak, G2S
Might ..... Mahogany, G1S
Mile ..... Mahogany, G2S
Milk ..... Plain mahogany, G1S
Mind ..... Plain Mahogany, G2S
Mingle ..... Mahogany drawer bottoms, not sanded
Minute ..... Mahogany drawer bottoms, S1S

ROTARY CUT

Nubbin ..... Unselected gum, G1S
Nudge ..... Unselected gum, G2S
Nugget ..... Unselected gum drawer bottoms
Number ..... Rotary-cut gum, G1S
Nurse ..... Rotary-cut gum, G2S
Nut ..... Sliced red gum, G1S
Nursery ..... Sliced red gum, G2S
Seal ..... Plain white oak, G1S
Search ..... Plain white oak, G2S
Second ..... Plain red oak, G1S
Secure ..... Plain red oak, G2S
Toledo ..... Sliced-cut walnut, G1S
Tomato ..... Sliced-cut walnut, G2S
Tongue ..... Rotary-cut walnut, G1S
Rotary-cut walnut, G2S
Torch ..... Plain walnut sap, no defect, G1S
Town ..... Plain walnut sap, no defect, G2S

Ship ..... When can you ship?

Ace	Ship in 10 days	King	Ship in 30 days
Duce	Ship in 15 days	Queen	Ship in 60 days
Tray	Ship in 20 days	Jack	Ship in 90 days

Opportunities for Export

Further information with regard to the following inquiries may be secured from the publishers of this paper or from the department of Trade and Commerce, Ottawa. Give inquiry number when writing:

Tea Chests.—Standard size. Offers must be competitive with English chests at 3s. 2d. c.i.f. Java port. No. 2924.

Furniture.—A French firm wish to receive quotations. No. 2898.

Machine for Woodwork.—A French firm want quotations on the above for direct purchase; fitted to be worked electrically. No. 2896.

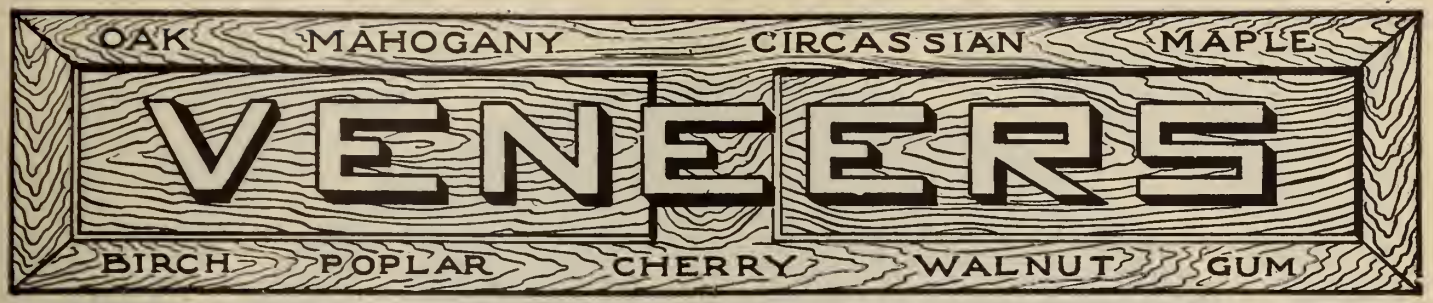
Musical Instruments.—A French house want to obtain the agency of a Canadian exporter. Has asked for prices, samples and quotations. No. 2909.

Pine Doors.—The export office of an important English company has an inquiry from their Australasian house for pine doors of Canadian manufacture, and will be glad to hear from Canadian manufacturers interested. No. 2927.

Furniture.—A manufacturer's agent in Demerara, British Guiana of long standing, is desirous of obtaining Canadian connections for furniture in all of its branches, including chairs and rockers—the former with both cane and wooden seats. Territory to include entire West Indies, exclusive of Jamaica. Catalogues, price lists and trade terms. No. 2931.

Pianolas, Phonographs.—A French firm wish to receive direct quotations; direct sales. No. 2844.

Gramophones, etc.—A French firm wish direct quotations; also on machines for making ices. No. 2845.



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Wood-Mosaic Lumber, when it comes to you for conversion into things of use and beauty, possesses all its natural value *plus* the essential advantages of the most skillful sawing, trimming and drying.

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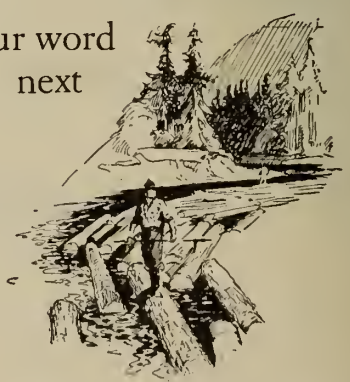


WOOD-MOSAIC COMPANY, *Incorporated*, Louisville, Kentucky

WOOD-MOSAIC LUMBER & VENEER

Ready to ship from Grand Rapids

1/20", 1/8", 3/16" Yellow Poplar

A Size for Every Purpose

WALTER CLARK VENEER COMPANY

GRAND RAPIDS, MICH.

CHESTNUT PANELS

We are now in a position to supply Chestnut Veneered Panels

In stock sizes or made to order

Let us have your enquiries

ALSO

PANELS in Domestic and Foreign Woods, FLUSH VENEERED DOORS
VENEERED STILES and RAILS

HAY AND COMPANY LIMITED

WOODSTOCK, ONT.

How to Teach a Trade

A volume of interest to instructors in various technical schools, and also to superintendents who are responsible for the training of new unskilled help, was recently published by the Manual Arts Press, Peoria, Ill., under the above heading. The author is R. W. Selvidge, professor of industrial education at the University of Missouri and is based on the experience the author gained in the rapid and efficient training of men for industries during the great war, backed by his practical trade experience and his thorough knowledge of teaching. It deals thoroughly with four distinct phases of training. 1. The things one must be able to do—which represent skill. 2. The things one must know—which represent information. 3. The problems one must solve—which represent the calculation involved. 4. The practical application of this knowledge on real jobs.

It is divided into ten chapters as follows: 1. Introduction. 2. The Skilled Worker and the Skilled Mechanic. 3. The Analysis of the Trade. 4. The Unit Operation. 5. Topics of Information. 6. Problems of the Trade. 7. Analyzing and Planning the Job. 8. Interest, Habit, and Skill. 9. Some Difficulties and Advantages of the Plan. 10. Making the Plan Work. Price, $1.00.

Aiding Operator of Boring Machine

Many boring machines of modern design are equipped with a blower attachment which clears the chips off the table and work. This tends to speed up production as the operator is not called upon to brush the chips away after boring every piece or two. It also tends for greater accuracy as there is not the same likelihood of chips lodging in front of the stops and thus throwing the holes out. It is not much of a trick to attach a blower to any boring machine. If an air line is handy, all that is necessary is to tap this and run a pipe to the boring machine and fit it with a small nozzle which would direct the air toward the bit. If compressed air is not available a small fan can readily be rigged up and piped to the boring machine. The main thing is to supply a sufficient volume of air to carry the chips away as fast as they are made. The resultant increase in output more than compensates for the slight outlay involved.

Importance of Low Handling Costs

The Material Handling Advisory Bureau is the name of a new commercial organization recently formed in Chicago, Ill., to co-operate with manufacturers in the solving of their handling problems. The handling of material is entirely non-productive, no amount of trucking, piling, loading, or unloading adds to the value of the article, but does increase the cost in fixing the selling price. Any reduction of this item tends to increase the margin of profit. In a competitive market a manufacturer whose handling costs have been reduced by mechanical methods can sell at a lower price with a greater margin of profit than a concern that has not paid the same attention to this important phase of the work. This new organization is under the direction of Mr. Harwood Frost who has had many years experience in the designing and application of various types of handling equipment and in the study of handling methods.

Living Through Fire

Nature devises amazing ways of enabling her children to survive extraordinary hardships. None of her inventions has more wonderful powers of endurance than the seed by means of which plant life is carried on.

You may subject certain seeds for hours to a temperature of 100 degrees below freezing point, you may heat them until they are hot enough to burn your hand, yet they will not lose their vitality.

In America huge fires sometimes rage through the forests, destroying mile after mile of giant trees. Where the fire has passed there remains nothing apparently but charred stumpt and flame-scarred, smouldering soil. Yet within a few months the whole district will be green with the first leaves of tiny seedling trees.

When tests were made recently to discover the heat at ground-level during a forest fire, it was found that it was from 1,000 to 1,500 degrees Fahrenheit. The fires move so quickly that this intense heat lasts only for a minute or less at any spot.

Various tree seeds were then tried to see what heat they could resist. It was found that fir cones could withstand a temperature of 1,200 degrees Fahrenheit for eight minutes without losing their vitality.

Do You Appreciate Your Customers Business?

No doubt you do; but many of the buyers, big and little, whose patronage you enjoy feel sometimes that you don't care whether they send their orders to you or not.

Of course you can't personally step into the office or store of each of them and say "Thank you"; but you can do just that by using advertising space in the business publications your customers read.

Tell them through the "Furniture World" the things you would tell them if you were face to face. It will please them—and they will get your message, because the good business papers cover their fields thoroughly and intensively.

Your advertising will not only develop new sources of business, but it will reach and satisfy the buyers you are now selling. Let them know that their business is appreciated.

Recent Shellac Quotation

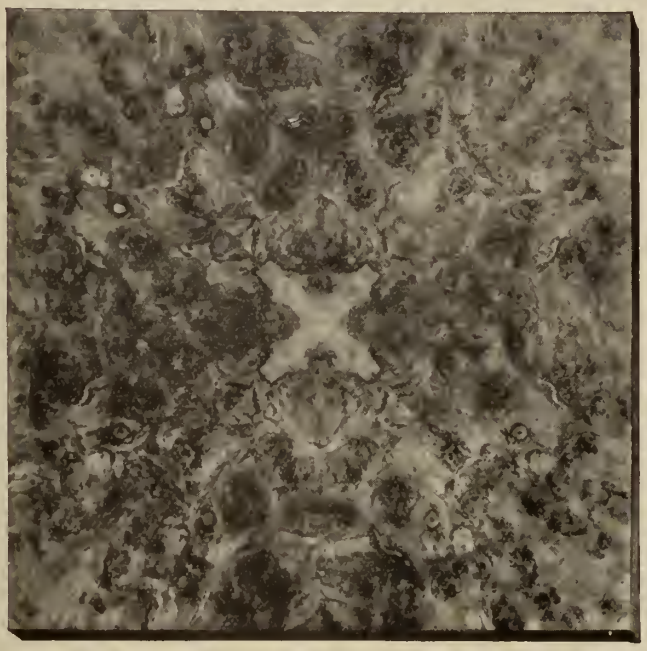
There is a probability that shellac prices may go even higher because of a shortage of gums. The present figures taken from the New York market, are as follows:

Pure T.N. Shellac	62c lb.
Pure No. 1 Light Orange	65c lb.
Double Triangle G, first Orange, Free	70c lb.
Guaranteed Pure Garnet Shellac Free	56c lb.
Bonedry White, best makes	75c lb.

A man's producing years probably averages twenty-eight, to be conservative. What o'clock are you now? What have you done already? What do you still hope to do before the gong strikes for quitting time?

C. L. WILLEY COMPANY

The **Largest Veneer Plant** *in the* **World**



AN inch of wood is cut into sixteen or, in the most valuable specimens, into twenty eight slices. This degree of manifolding means just that much more pleasure given—that much more service rendered.

Each sample of WILLEY'S beautiful Veneer is a noble Coat of Arms, attesting the chivalry of a Knight of the Woods. A pattern of Veneer is formed of the proud devices and quarterings of Nature's Heraldry.

Veneer and Lumber

Walnut
American and Circassian
Mahogany
Quartered Oak
Satinwood
Vermilion
Teak
Rosewood

And Many Other Foreign and Domestic Woods

(2689)

Knights of the Woods

A tree lives, a tree bleeds when wounded, it heals, it bears honorable scars; it is a protection to man during its life, and serves his uses in a thousand ways after its life is over. Whether it stands as a lonely sentinel, or in the serried ranks of a forest battalion, or whether it "lives by the side of the road", it is always a friend to man.

Veneer is the means by which the noblest of these knightly defenders of the human race can be multiplied in its service to mankind. This would not be possible if the beauty of a tree were only skin deep. Stripped of all camouflage, bared to the depths of its real nature, then revealed at each level of its substance till no fault or flaw can remain concealed—which of us would dare to let his mind or character be so exposed to sunshine and fresh air in the view of even the kindliest human eyes?

C. L. WILLEY COMPANY

2558 South Robey Street
CHICAGO

J. SMITH, Sales Representative
216 Mead Building, Rockford, Ill.

W. B. VAN, Eastern Sales Representative
Everett Hotel, Jamestown, N.Y.

The Lumber Market

Imported Woods

The hardwood market does not evidence any material change. There is a fair volume of stock moving at about the market level of prices. While there are bound to be fluctuations in certain items it does not appear as if present values will change much either one way or another. A strong demand early in the coming year would tend to stiffen prices, but whether or not such a demand will materialize is problematical. At the present time some stock is being offered at slightly below the prevailing price levels. This is the effect of some few individual holders to market some material and to stimulate sales during what is usually a dull period, namely the pre-inventory period, rather than an indication of any softening or weakening of the market.

Memphis, Tenn.

The hardwood market continues steady. There is apparently almost complete absence of "block" buying but the mere fact that consumers are buying hand to mouth argues that there must be necessity of buying frequently, and on rush orders, which comparatively small themselves, are large in the aggregate. Consuming interests are carrying only modest stocks and they are under the necessity of buying frequently, and on rush orders. Some of the larger firms here have no more than enough orders to keep them going for a week or ten days, but they have been in this position for some time and they are still a week or ten days behind in their shipments. Meantime, the figures on forest products loadings compiled by the American Railway Association leave no doubt in the minds of any one that the aggregate movement of these commodities to market is quite up to, if not actually above, the average for a series of years. Prices are generally holding their own.

Louisville, Ky.

There is a fairly active demand for hardwoods, several houses reporting good sales of oak, ash, poplar, and gum, while walnut is moving especially well. Demand is principally for common grades, but there is a fair demand for FAS. It is reported that demand is keen for all grades of walnut, as the furniture, cabinet and fixture trades are all taking walnut freely, while walnut veneers are also moving well. Prices show no material change, although there is a little more range, especially as between prices of lumber produced from logs of this section and that cut from southern logs, country logs from this section being a little stiffer in price. Quotations, inch stocks FAS and common: Quartered oak, $130 @ 140 and $80. Plain oak, $90 @ 95 and $65. Poplar, $105 @ 110 and $55 @ 60. Saps and selects, $85. Quartered red gum, $90 and $50 @ 60. Sap gum, $52 and $42. Walnut, $215 and $115; selects $155. Chestnut, $110 and $65.

Buffalo, N. Y.

The hardwood market does not show any great amount of activity at present, though a slight improvement is reported at some yards. Some industrial concerns have lately been increasing their orders and taking stock on delayed shipments. This applies to some of the automobile concerns, who regard the business outlook as favorable. The building trade is keeping up well and good trim and flooring is reported.

Maple, birch and beech are among the best woods in the list at present and are holding firm. Some yards are getting a better demand for basswood than formerly. Poplar is in steady demand. Oak prices are unsettled and some grades are showing a decline. Sap gum continues to show a strong tone. Some oak flooring manufacturers have advanced their prices in the past two or three weeks, while with others no change has taken place.

Domestic Woods

There has been very little change in the local lumber markets. The amendments to the sales tax which go into force the first of the year have had the effect of checking any tendency toward increased activity which may have been expected during the late fall months. The attitude of wood users seems to be that rather than bother with making claims for deductions and refunds they are deferring as much buying as possible until after the first of the year.

Of chief interest to the trade at the present time is whether prices will hold and what the outlook is for the coming year. Stocks with most concerns are much lower than they were a year ago as lumber of all kinds, owing to the active demand this spring and early summer, was shipped out more promptly than usual.

The output of nearly all the mills has been disposed of and logging operations will be carried on in most territories more extensively than during last season. It is hard to estimate the increased cost of lumbering during the present winter but owing to the scarcity of men and the advance of 25 to 33 1/3 per cent in wages, it is believed that the logs by the time they reach the mill, will cost fully 25 per cent over last winter.

Speaking of the future and present conditions in the lumber arena, a leading Toronto wholesaler stated lately that dry stocks in Ontario spruce and jack pine were scarce at the present time and prices were ruling firm. Low-grade lumber just now is not plentiful and all available sources of supply have been pretty well combed for No. 1 and No. 2 mill culls. Common, box and dressing in white pine is not moving as freely of late across the border owing to competition from Idaho pine which has come down somewhat in price and is shutting out the Ontario product. "I have," he declared, "visited a number of mills in the north and they are all of the opinion that lumber will be a dearer commodity next year, not only by reason of the sales tax being doubled but also from the fact that it will cost from $3 to $6 more per M, b.m., to get out logs due to greatly increased wages and general inefficiency of labor.

"Now, the question arises, who is going to absorb this increase in the price of production? Will it be the mill man or the wholesaler? In the spring, if the market is active and the outlook brisk, the wholesaler will have to pay the extra amount, but if conditions are stationary and there is no particular flurry, it would seem that the mill man would have to absorb this augmented outlay. You will thus see that the situation is a most interesting one from a speculative standpoint.

The Sidmans of Canada

Heating and Ventilating Engineers and Lumber Curing Specialists

Designers of

The Sidman Lumber Curing Kiln

and accessories for all drying purposes

The Sidman Gravity System

for heating factories

Either with Low Pressure Cast Iron Boilers for factories and kilns, where "Juice" is used for power, or,

Using Exhaust steam and reduced Live Steam, with ALL Condensation AUTOMATICALLY returned direct to the boiler by means of THE SIDMAN SUCTION SYSTEM.

NOTE: The SUCTION SYSTEM can be used on any and all old heating plants, and will effect a substantial saving in fuel, and a BIG saving in trouble and repairs.

THE SIDMAN AUTOMATIC STEAM-VACUUM SYSTEMS, for all kinds of houses or Office Buildings. The cheapest to operate, and MOST SATISFACTORY system ever used. Burns any kind of fuel.

Plans for ALL the above can be furnished BY MAIL, saving for the user THE SELLING EXPENSE.

Write us for details.

The Sidmans of Canada

LONDON **ONTARIO**

THE SIDMAN LOCK Reg Trade Mark

"Well Bought is Half Sold"

SPECIAL MENTION WHITE PINE

For General Shop-work

5 cars 1 x 3 & up—8/16 Mill Run

In pink of condition
Contains nice percentage of Good.

Approx. Widths:

3″	4″	5″	6″	7″	8″	9″	10″	11″
2%	13	17	27	13	12	10	5	1

At same point we have 3″ White Pine in assorted widths.

Canadian General Lumber

Company Limited

FOREST PRODUCTS

TORONTO OFFICE:—
1005 Federal Building

Montreal Office:—514 Canada Cement Company Building

Mills: Byng Inlet, Ont.

News of the Trade

G. J. Paradis, Cal du Saumon, Que., are in the market for a circular saw.

J. Penman, Middleville, Ont., is in the market for a mortiser and planer.

L. S. Berraud, 121 Lake St., Pembroke, Ont., is in the market for woodworking equipment.

Foisy & Hotte, Shawbridge, Que., are in the market for equipment for a woodworking plant.

G. Haysey & Co., 55 St. Mark St., Montreal, are contemplating the purchase of a bandsaw.

Canadian Watercraft, Limited, are contemplating the purchase of boat building machinery.

Fire recently damaged the carriage shop of A. D. Fulton, Stewiacke, N. S., to the extent of $5,000.

T. Larose, St. Jerome, Que., are contemplating the purchase of equipment for a sash and door factory.

Fire destroyed the dressing mill of the Canadian Lumber Co., Limited, Stewiacke, N. S. Loss of $15,000.

The McLean Lumber Co., Windsor, Ont., contemplate the erection of a factory. Estimated cost $30,000.

A sprinkler system is being installed in the Seaforth plant of the Canada Furniture Manufacturers, Limited.

E. Kalbfleisch, of the Kalbfleisch Planing Mill, Stratford, Ont., is enjoying a three weeks' deer-hunting expedition.

N. Blain, Ltd., 68 Casgrain St., Montreal, are contemplating adding some woodworking equipment to their plant.

The McLean Lumber Co., of McDougall Ave., Windsor, Ont., are erecting an addition to their plant at a cost of $30,000.

R. Potter, Matheson, Ont., is in the market for equipment for a steam sawmill to replace that which was destroyed by fire.

Capt. Stitt, Canadian manager of the Dake Engine Co., is removing his office from 45 Adelaide St. E., to 502 Kent Bldg., Toronto., Ont.

The Alliance Lumber Co., Denismure & Gage Aves., Hamilton, Ont., are enlarging their factory and extending office accommodation.

The Canadian Yellow Cab Mfg. Co., Montreal, are open for tenders on machinery and equipment for the manufacture and repair of taxicabs.

Plouffe & Cie, Limited, Montreal, is a new company recently formed to manufacture and deal in lumber and wood products. Capital $25,000.

Krug Bros., Chesley, Ont., recently purchased the boilers from the stave mill of Cargill, Limited, and will move them to their factory at Chesley.

J. J. Little, Dufferin St., Toronto, Ont., has taken over the sash and door factory formerly conducted at Fairbanks, Ont., by Little, Brown & Hydall.

Taylor & Loree, 911 Bathurst St., Toronto, Ont., are contemplating the erection of a factory for the manufacture of automobile tops. Estimated cost $55,000.

J. T. Arnold & Son, Barrie, Ont., manufacturers of excelsior and wood wool, contemplate making a line of excelsior bottle wrappers and furniture pads.

Malcolm & Hill have received a number of inquiries from France as a result of their exhibit in the Made-in-Canada train which toured that country recently. They are following up these inquiries closely but are afraid that the high freight rates will be a deterring factor in going after this business.

The Chesterfield Furniture Company, Kitchener, Ont., which was recently organized, are reported to be making good progress, having a number of large orders on hand.

W. P. McDonagh and Charles Pedwell have recently joined the inspecting staff of the McDonagh Lumber Co., Toronto, and are looking after a number of stocks in the East.

Canada Doors & Lumber Limited, 914 Credit Foncier Building, Vancouver, B. C., with a capital of $100,000, was recently formed to manufacture doors and other wood products.

Craft House is the name of the new building in Grange Park, Toronto, secured by the Ontario College of Art, in which will be carried on a study of handicraft work of all kinds.

The Shuniah Lumber Co., Port Arthur, Ont., was recently incorporated to manufacture and deal in wood products, and to carry on a general lumber business. Capital $40,000.

The B. C. Fir & Cedar Company's planing mill at False Creek, B. C., which was destroyed by fire last August, will be rebuilt. The cost of the new structure will be about $100,000.

Fire recently destroyed the plant of F. H. Plant, Limited, carriage and auto body manufacturer of Ottawa. The building was of frame and brick construction and the estimated loss is $6,000.

Lafrance Inc., Quebec, P. Q., were recently granted letters patent to manufacture and deal in wood products of all kinds. Capital $20,000. Lucian Lafrance and Eugene Barry are two of the incorporators.

George S. Zimmerman, of Tavistock, Ont., president of the Eastern Canada Box Manufacturers' Association, was in New York lately attending the annual meeting of the National Box Manufacturers' Association.

The plant of the Midland Woodworkers, Limited, Midland, Ont., has been taken over by the International Fibreboard, Limited. The plant is being remodelled to suit the requirements of the new tenants.

The dry kiln and several other buildings belonging to the Kalbfleisch Planing Mill, Stratford, Ont., were recently destroyed by fire. This blaze is being investigated as it is suspected to be of incendiary origin.

According to Col. Forester of the B. C. Products Bureau, a woodworking plant is to be established shortly in Vancouver to manufacture toys. Most of the articles to be manufactured will be made from B. C. woods.

Jacques Furniture Co., Canada Furniture Manufacturers, Limited and Malcolm & Hill, all of Kitchener, Ont., have started their plants operating again after making some improvements and repairs during the quiet season.

S. C. Johnson & Son, Limited, Brantford, Ont., manufacturers of varnishes, enamels, stain and other similar products, recently purchased the Canadian business from the parent concern, S. C. Johnson & Son, Racine, Wis.

The Oliver Lumber Co. have erected an attractive new office building at the foot of Spadina Ave., Toronto, and have moved their Yonge St. office to their yard which is located at this point and is convenient for shipments, deliveries, etc.

The Dowling Furniture Manufacturing Co., Vancouver, B. C., will shortly commence the erection of a furniture fac-

If fire should visit your plant tonight

If fire should visit your plant tonight—would it be effectually smothered by an "Automatic" Sprinkler System the minute it started, or would it continue to gain headway until the firemen arrived, with a consequent loss running into the thousands?

We have some information on this subject that will interest you.

The Bennett & Wright Co.

Limited ——— Contractors

72 Queen Street East TORONTO

Western Ontario Branch

77-81 King Street London

Bond POWER TRANSMISSION

comprises

Hangers with Babbitt, Ball or Roller Bearings
Pillow Blocks
Flat Boxes
Mule Stands, Wall Boxes,
Spiro Compression Couplings, Clamp Couplings.
Plate and Sleeve Couplings
Cast Iron Pulleys
Solid and Split Collars
in fact everything
for transmitting Power in Woodworking establishments.
also
Bond Ball Bearing Truck Casters.

For High Speed Machines use the Bond Ball Bearing Loose Pulley. Used extensively on High-Class Woodworking Machinery, it has given the utmost satisfaction. Catalog 38 cw sent on request.

BOND ENGINEERING WORKS, Limited

Villiers and Munition Sts.
TORONTO

CHOOSING A SOURCE OF SUPPLY --

-- is not always an easy matter for the Lumber Buyer

YOU CAN DEPEND ON US --

-- our modern operation and experience insures you

QUALITY CO-OPERATION

Inquiries Solicited

PLAIN RED OAK
50,000 4/4 FAS
150,000 4/4 No. 1 Com.

PLAIN WHITE OAK
100,000 4/4 FAS
16,000 1/2 FAS
193,000 4/4 No. 1 Com.
10,000 8/4 FAS

ASH
25,000 4/4 FAS
25,000 4/4 No. 1 Com.

PLAIN SAP GUM
23,000 5/8 FAS
32,000 5/8 No. 1 Com.
75,000 3/4 FAS

PLAIN RED GUM
40,000 4/4 FAS
50,000 6/4 FAS
100,000 4/4 No. 1 Com.
45,000 6/4 No. 1 Com.

QTD. RED GUM
20,000 4/4 FAS
50,000 4/4 No. 1 Com.

ELM
50,000 6/4 Com. & Btr.
14,000 6/4 No. 2 Com.

TUPELO GUM
15,000 13-17 Bx. Bds.
15,000 4/4 FAS

HICKORY
50,000 6/4" Log Run

KELLOGG LUMBER COMPANY INC.

FONDALE, LOUISIANA

tory. Employment will be given to about 30 men in the new plant. It is reported that some new equipment is required.

Ethier Kern & Co., Limited, 226 Beaudry St., Montreal, was recently granted a provincial charter to take over the business of Arthur Ethier, and to manufacture and repair carriages, implements, automobile bodies, etc. Capital $49,000.

The Canadian Glass Company Limited, Amherstburg, Ont., is a new company recently formed to manufacture and deal in all kinds of glass ware. Capital $1,500,000. A. A. Icenhour, Amherstburg, and F. G. Hablitzell, Sarnia, are two of the incorporators.

E. O. Weber, Limited, Waterloo, Ont., have added a number of living room and novelty articles to their line. Their Kitchener plant is being overhauled in order to manufacture these lines, and the finishing of such articles will be carried on in their Waterloo plant.

The name of the Naylor-Osborne Co., of Sandwich, Ont., has been changed to the Sandwich Lumber Co. The alteration in the style was made recently to save confusion between the Naylor-Osborne Co., Limited, of Essex and Tecumseh and the Naylor-Osborne Co., of Sandwich.

The Walker Twist Drill and Tool Company's plant, Windsor, Ont., has been taken over by Dodge Brothers Motor Car Co. It is being completely renovated and will be equipped with new machinery preparatory to the business of assembling cars for Canadian domestic trade.

The Fisher Sander Co., Kitchener, Ont., are busy on orders for their automatic stroke sander. One of these machines was recently installed in the plant of the Gibbard Furniture Co., Limited, Napanee, Ont., while a second is being completed for the Lippert Furniture Co., Limited, Kitchener, Ont.

The Morrow Manufacturing Co., Limited, London, Ont., which was incorporated to take over the carriage manufacturing business of W. L. Morrow & Co., are erecting an addition to their plant at a cost of $10,000. It is anticipated that when the new section is completed the staff will be increased from 10 to 30 mechanics.

London Lumber Co., London, Ont., MacDonnell & Conyers, Ottawa, J. C. McDiarmid, Reg., Montreal, Que., have become members of the National Hardwood Lumber Association. The Satin Finish Hardwood Flooring Limited, Weston, and Builders' Moulding Co., Toronto, have become members under the Associate Membership plan.

The Haileybury Lumber Co., Haileybury, Ont., who are erecting a woodworking plant on the premises formerly occupied by the rossing plant of the Riordon Company, are installing the following machines, Preston ball bearing molder, Preston Eaglefield beltless swing saw, Preston ball bearing power feed rip saw, and a Stockbridge grinder.

J. H. McDonald, manager of the Westminster Shook Mills, New Westminster, B. C., and managing-director of the British Columbia Mfg. Co., spent a few days in Toronto on his way to England where he will spend some time. The firm will make an exhibit at the British Empire Exhibition which opens in London in April next and will continue for six months.

The S. Hadley Lumber Co., Limited, Chatham, Ont., have recently secured some nice contracts for woodwork. Two are from the Royal Bank for complete fittings for new branches being opened in Cuba. In addition they have secured the contract for the woodwork for the new Science Building at the Western University, London, Ont., and the new C. P. R. station at St. Joachim.

S. Bruce Nichol, Blenheim, Ont., recently completed a woodworking plant. The building is of steel and concrete, 26 ft. x 50 ft., two stories high. Electric power is being used, a Crocker-Wheeler motor having been installed. At the present time the following machines are in operation: surfacer, rip saws, cut off saw, sticker, mortiser, band saw, jointer, turning lathe, boring machine, tenoner.

The Mov-Ezy Seating Co., of Canada, Limited, Montreal, P. Q., has been incorporated with a capital of One Million Dollars to manufacture and deal in chairs and chair equipment and fixtures. The incorporation papers do not disclose who is behind this new company. Gerald McTeighe, Barrister and Solicitor, of Montreal, is being given as one of the incorporators. It is reported that this company are in the market for some woodworking equipment.

W. S. Ewens has been appointed manager of the Ontario District Sales Organization of the Sangamo Electric Company of Canada, Limited, and the Wagner Electric Manufacturing Company of Canada, succeeding R. M. Scrivener, who has been appointed special agent for the Wagner Electric Corporation, St. Louis. Mr. Ewens is a graduate of McGill University and has spent many years with the Canadian Westinghouse Company and the Northern Electric Company.

P. W. Gardiner & Son, of Galt, Ont., have lost no time in commencing to rebuild the portion of their plant which was recently destroyed by fire. The debris has been cleared away and a one-storey fireproof brick storehouse for lumber for purposes of manufacture is being erected. The building is 160 x 100 feet and is situated north of the factory. In reconstructing the destroyed sections, the company plan a change in the layout of the buildings, with a view to not only greater safety but also to increased efficiency.

The name of J. H. Kennedy of the Malcolm & Hill Furniture Co. Limited, Kitchener, Ont., has been mentioned several times in connection with the affairs of the Home Bank. Mr. Kennedy came into prominence in 1915 when he refused to sign a statement that he claimed would have made him liable for imprisonment on a charge of fraud. He was suspended for three months by the directors for his refusal to sign this document, but was later made manager of the Church St. branch. This position he resigned in 1916.

The Berliner Gramaphone Co., Limited, Montreal, Que., are completing their new plant. It will be remembered that this new factory was erected in 1921, but active operations were suspended shortly after the completion of the building. The equipment is now being installed and it is anticipated that the plant will be in operation early in 1924. The new factory is 500 feet long, 5 storeys high, and contains approximately 100,000 square feet of floor space. A considerable proportion of the machinery has been purchased from the Columbia Phonograph Co., Toronto.

The hardwood flooring factory of the Seaman, Kent Co., Limited, at St. Agathe, Que., was completely destroyed by fire recently. The blaze broke out from an unknown cause in the boiler house about six o'clock in the morning and made such rapid progress that it was impossible to save the plant. The hardwood lumber in the yard which was some distance from the factory, and the office building was saved. The total loss is about $200,000 and is fairly well covered by insurance. This plant was acquired from the Standard Mills Co. some twelve years ago and had been operated by the Seaman, Kent Co. ever since. Hardwood flooring, principally of birch, was turned out to the extent of 7,000,000 board feet annually, the factory being a three-unit one. The product was sold largely in Quebec, the Maritime provinces and the New England States.

Gum

Oak, Ash and other Southern Hardwoods

Quality Justifies Price

Kraetzer-Cured Lumber Insures—

1. Freedom from warp.
2. Maximum quality.
3. Lower moisture content.
4. Less kiln drying Cost.
5. Uniformity.
6. Accurate grading.
7. Bright, unstained lumber.
8. Saving in working costs.
9. Dependability.

Isn't this the kind of lumber you're looking for?

Member of

HARDWOOD MANUFACTURERS INSTITUTE SCIENTIFIC UTILIZATION TRADE MARK

Occasionally a comment reaches us that Kraetzer-Cured Lumber seems a bit high in price. We welcome an inquiry of this nature because it permits an opportunity for comparison of price with the quality of the product. Such an opportunity was afforded us recently when the E. H. Stafford Manufacturing Co. wrote us as follows:

> "For a long period of time the writer had the impression that your lumber always was too high priced, but the stock we have been getting from you leads us to believe that it is very profitable lumber to use. We use the gum in question in the manufacture of church pews, office furniture and a number of other purposes."

When the finest quality of lumber is required by discriminating manufacturers of fine furniture, Kraetzer-Cured Lumber will meet the most exacting specifications.

> May we suggest to other careful buyers that a substantial saving in working cost and enrichment of reputation for dependability of goods manufactured, would logically result as it has in other cases, from the use of our product.

The Kraetzer-Cured Lumber Co.

Greenwood, Miss.

ON EVERY BOARD THE KRAETZER-CURED LUMBER CO. YOUR GUARANTEE OUR MUTUAL PROTECTION

Look for the Brand on Every Board

General Woodworking Trade Mart

Quick Action Section

Equipment Materials Employment

Nailing Machine

1—practically new, No. 16, Morgan 36" Open Back Nailing Machine, latest type, with Cleating and Clinching Attachments; Power raising and lowering device to table. Price $1600.00 f.o.b. cars, Bridgewater, Nova Scotia. Immediate shipment, subject prior to sale. Apply: FLEMING & MACLEAY, AGENTS, Bridgewater, N.S. 7-T.f.

FIVE

of these machines have been sold but we have 195 left.

What Do You Want

SHAPERS

American Bronze Bearing Two Spindle.
Ballantine Two Spindle.

SURFACERS

Preston 24" Pony Planer.
Major Harper 24" Pony Planer.
Jackson-Cochrane 24" Endless Bed.
American No. 112 26" Double Surfacer.
American No. 49 30 x 12 Double Surfacer.

MOULDERS

Yates 12" No. 108 Four Side.
American 10" No. 26 Four Side.
Cowan 12" M-152 Four Side..
Cowan 10" M-152 Four Side.
American 8" No. 505 Four Side.
Yates C-4 8" Four Side.

SAWS

34" American Band Saw.
28" Post Band Saw.
American Double Arbor Universal.
Ballantine Self-feed Rip Saw.
American Swing Saws.
American No. 4 40" Band Resaw.
American Scroll (Jig) Saw.
American No. 25 Edging Saw.
Mershon No. 1 Band Rip Saw.
Mereen-Johnson Box Rip Saws.
Mereen-Johnson Box Cut-off Saws.
Yates No. 229 Double Cut-off Saw.
Mereen-Johnson Cleat Saws.
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Dovetailer.
Filing Room Equipment.
Box Machinery of all kinds.
25 cycle, 3 ph. 550 volt Motors, 5—25-40 H.P.
Factory Trucks.
Veneer Jointer, Clipper, Glue Spreader, and other Veneer Room Equipment.

Garlock Machinery Limited,

Office:
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Warehouse:
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8-11 TORONTO

Factory Surveys Made

Some factories make a profit but should make more. Other factories lose money yet should be making a profit. I have been making practical surveys of Furniture factories for 20 years. Have had free access to hundreds of factories and know what makes some successful and others failures. Have also built and managed factories. If interested—address Box 163 care Canadian Woodworker, Toronto. 9-12

Box Making Machinery For Sale

We have for disposal the following machinery, all in good order, from the plant of the Dominion Box & Package Co., Montreal.

1—Linderman automatic dovetailer, 8 ft.
1—Linderman automatic dovetailer, 4 ft.
1—Morgan Box Board Matcher.
1—Berlin No. 229 Adjustable Hopper feed cut-off saw.
1—Mereen Johnson Hopper feed box board squeezer.
1—P. B. Yates No. 213 Cintinuous feed jointer.
2—P. B. Yates swing cut off saws 4 ft.
4—Swing cut off saws 6 ft.
10-Saw tables, rip.
1—Morgan Box Board Matcher (old type)
1—St. Paul Double end Box Dovetailer with squeezer and trimmer.
1—48" Double disc sander.
1—Chase Turbine Groover.
1—Macgregor Gourlay combination saw table. Similar to C.M.C. No. 616.
1—Ballantyne post borer.
3—Reynolds automatic screw drivers.
1—B. G. Luther double cut off saw.
2—Morgan shook splicers, for corrugated fastners
1—Doig shook splicer.
1—M. L. Andrews Multiple Boring Machine.
3—12 Punch Morgan open back nailers.
1—10 Punch Morgan open back nailer.
1— 8 Punch Morgan open back nailer.
1— 8 Punch Morgan closed back nailer.
1— 8 Punch Morgan closed back nailer with side arm attachment.
2—6 Punch Morgan closed back nailer.
1—13 Punch Doig nailer 1915 Model.
1— 9 Punch Doig nailer 1915 Model.
1— 5 Punch Doig nailer with 3 punch side arm.
1—S A. Woods lock corner machine No. 211.
1—Morgan No. 1 Setting up machine.
1—Setting up machine, foot operated.
1—Chase Hand hole machine.
1—Defiance No. 2 Belt Sander.
1—48 in. Double disc sander.
1—Garvin No. 2, 5 spindle drill.
1—B. G. Luther Box board squeezer.
1—F. X. Hooper two color printing press, 20 x 14 cylinder.
1—Single color printing press, 33 x 18 in. cylinder.
1—Prouty Printing press, 11 x 17 in.
1—Prouty Printing press, 16 x 26 in.
Several sets steel type, various sizes.
1—Gardner speed lathe.
1—150 punch two day Internationl time clock.
32 Boxes 25 lbs. ea. 6 oz. tacks.
800 gross 2 x 10" Brass wood screws in kegs.
100 gross 2 x 12" Steel wood screws in pks.
90 gross 1¼ x 7" Brass wood screws in pks.
2200 gross 1½ x 12" Steel wood screws in pks.
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8060 lbs. Box strapping.
400 Kegs Box nails.

Prices and further information gladly furnished on request.

The Redfern Lumber Co.,
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Your Factory Engineer

Should receive twice monthly a magazine that will tell him now to eliminate electrical troubles in the factory and show him how to cut your power costs. The ELECTRICAL NEWS is published for the benefit of users of electricity and contains valuable information for all factory superintendents who use electric power. $2.00 per year of 24 issues. Write to 349 Adelaide Street, West, Toronto. 6-t.f.

National Association of Chair Manufacturers

By WM. B. BAKER, Secretary

One of the largest meetings of chair manufacturers ever held took place on October 16 and 17, 1923, at Gargen City, Long Island. Instead of rushing through the program in a one day session the chair makers had a diversified program of work and recreation.

Preceded by a meeting of the executive committee, the association undertook to analyze conditions in the several departments of chair manufacturing. While there has been a reduction of unfilled orders with the factories, the demand at present is in excess of the producing ability of the factories, and the outlook is for a continuation of buying to justify steady employment of labor available. No opportunity exists for reducing the labor rate, and since July 1 there have been higher levels reached by some manufacturers. Material markets are holding steady, and with such a full knowledge of costs of manufacturing chairs the practice prevails of actual firmness of values for all types of chairs.

The association had launched a method of market analysis which will insure to each member information attractive in the direction of his individual policy.

The meeting was addressed by Dr. D. E. Burchell, of the Havard School of Business Administration, who outlined the functions of trade associations in developing activities of a positive benefit to each member.

M. L. Seidman gave a talk on "Accounting from the Executive's Point of View."

At the final session of the meeting Harold V. Coes, of Philadelphia, made a splendid impression with his talk "Econnomies in Chair Manufacturing made Possible by Engineering Service."

The wholesale outlook for the chair industry was reflected at the meeting in Garden City. The participation of those attending in golf and other sports showed that the meeting was thoroughly enjoyed by all present, and that the selection of the place was judged worth while.

The annual meeting will be held on December 4 and 5 at Absecon, New Jersey.

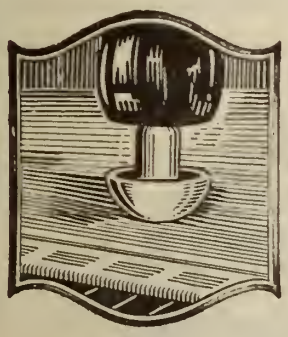
Makes Furniture Easy To Move

People are buying furniture that they can glide from place to place. The demand is for furniture fitted with the

No Glass To Break — Glide Easy Cup Caster — Heavily Nickeled Cannot Rust

PATENTED

These casters will not scratch floors nor rip rugs. They add to the life and the beauty of furniture. Made of rolled steel, heavily nickeled and polished, they will last for ever. They are easily fitted and will not fall out. New socket free with every caster.



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Canadian Sales Agent, 8 Colborne Street, Toronto

Made by Sanitary Caster Corporation, Newark, N. J.

The Door Carrier System

Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

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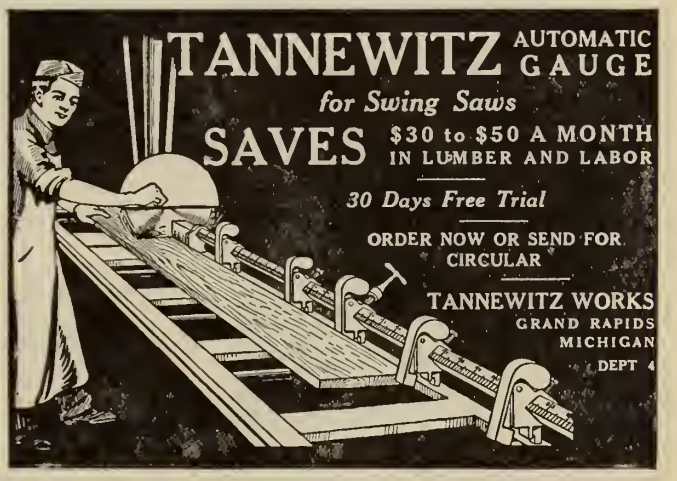

BOOKS FOR SALE

The following books are offered at special prices subject to previous sale:

"Chip Carving" by Harris W. Moore, published in 1922 by The Manual Arts Press, 46 pages, fully illustrated. Price 85c.

"Furniture for the Craftsman"—A manual for the student and mechanic, covering the design, construction and finishing of practically all the articles used in the furnishing and equipment of the modern home, porch and grounds, with hints on upholstering—by Paul D. Otter. Second edition, just published by U. P. C. Book Company Incorporated, 318 pages, illustrated. Price $2.00.

"The Kiln Drying of Lumber," a Practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J B. Lippincott Co. 316 pages, illustrated. Price $5.50.

Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price $4.00.

"The expert Wood Finisher"—A text book for the guidance of the expert workman and manual of instruction for the learner, by by A. Ashmun Kelly. Third edition, published in 1921, 278 pages. Price $3.50.

"The Utilisation of Wood-Waste," by Ernest Hubbard, Third English revised and enlarged edition, 236 pages, illustrated. Published in 1920 by Scott, Greenwood & Son. Price $2.00.

WOODWORKER PUB. CO., LIMITED 345 Adelaide St. W., TORONTO

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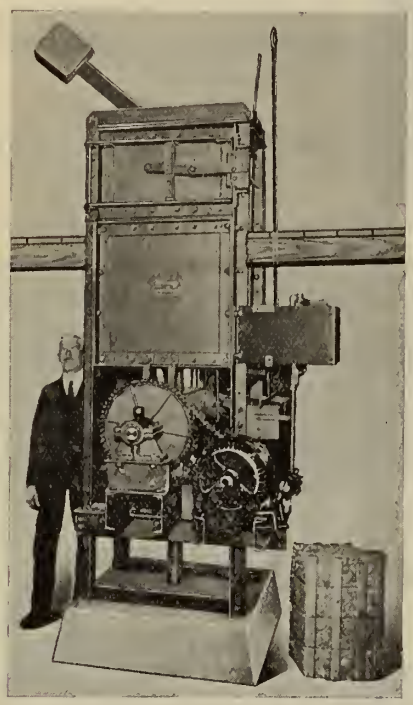

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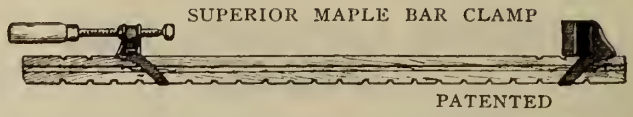

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The only clamp that has both head and tail blocks adjustable, so as to hold firmly at any angle.

Preferred by Grand Rapids Factories and Training Schools, because of this adjustable feature and solid construction.

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Bulldog Grip Wood Cement is a Waterproof and Heatproof Wood Cement.

MIXED COLD — USED COLD
Requires no heat. Causes no mess

No more heating of lumber.
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No more guessing if pieces will hold.
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Best glue possible for veneer door cores.

Is made in Canada with all-Canadian materials by Canadian workmen.

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Maple Leaf Saws are fast cutting and retain their edge longer than any other saws, because they are made from extra refined Razor Steel, tempered by our own secret process.

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"The largest all-Canadian saw Manufacturers"

One Man Does the Work of Two
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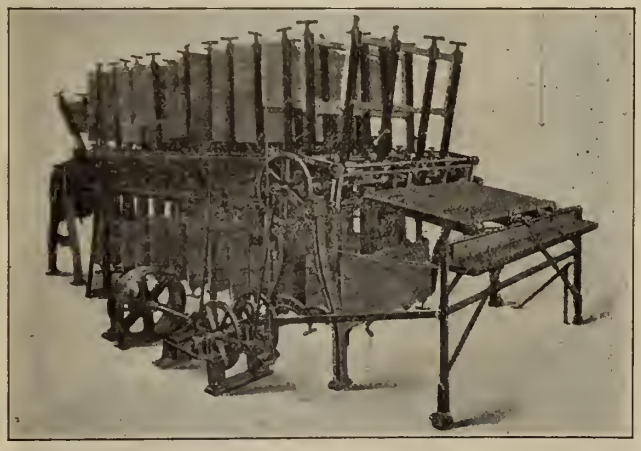

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Here's why:—

The empty clamp is held at just the right height for the greatest convenience of the workman.

When the clamp is filled he pulls a cord, which carries the filled clamp away and deposits an empty one in its place.

One man can accomplish as much by using it as two men can do employing the old methods.

It holds the work off the floor until the glue has set, when the glued stock can be quickly removed and piled flat, thus greatly conserving space.

It reduces the labor and cost of edge gluing to the minimum.

There is a size to suit your particular requirements.

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We carry in stock at Toronto a complete line of Elliot products, including the new No. 8 Elliot Woodworker with underslung Rip Saw Attachment. The new 16″ Pony Planer, Combination Jig Saw and Shaper, 28″ Ball Bearing Band Saw, 12″ Drum Sander, and the No. 7 Saw Table with Jointer and Boring Table. Write for cuts and prices, or call and see the machines operated.

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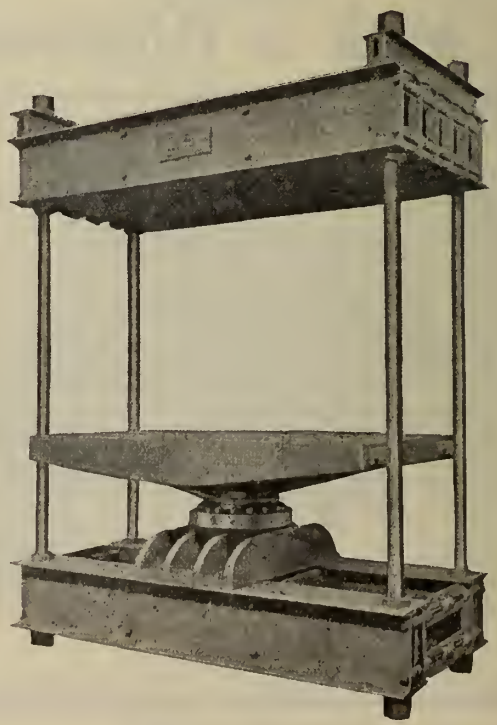
More Work - Better Work - Less Time - Lower Cost

PERRIN HYDRAULIC VENEER PRESS

The production of your veneer room will be increased many times and the work greatly improved if you substitute the Perrin Hydraulic Veneer Press for those you are using. This is the actual experience of furniture manufacturers who have installed them. The Perrin Press enables the operator to exert the required amount of pressure evenly over the whole surface, and the work comes out perfectly straight and flat. That means better workmanship and a finer product.

We will gladly give you full particulars and show you what users have to say about it without obligation to you.



William R. Perrin Ltd.

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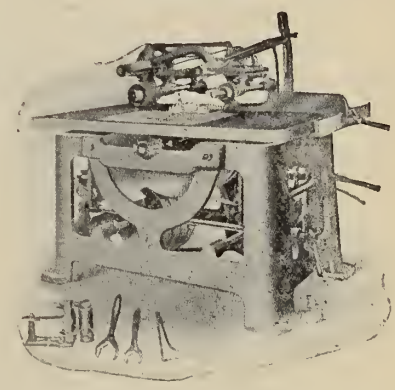
The manufacturer who makes the article is helpless without the merchant who makes the market

Reach your market through "Canadian Woodworker"

The Hoosier Self-Feed Rip Saw

is now made in eight styles



You will find one of these styles especially designed for your work.

No 1 the well known Standard, rips 6" thick, 17" wide; resaws to 6", adapted to single, gang or bevel ripping; the feed will pull six saws through 1" stock.

No. 2 is the No. 1 machine built with one stationary and one movable saw, which is adjustable while running to the full width of the collar space 8½".

No. 3 is especially designed for short gang ripping and will rip as short as 6½".

No. 4 is the No. 1 but built with a wider frame and has 14" collar space where the No. 1 has 8½" collar space.

No. 5 same as No. 2 and has movable saw, which travels the full width of the 14" collar space.

No. 6 is the same as No. 4 but built with an extension bracket at outer end of mandrel and will rip 24" wide.

No. 7 is the same as No. 1, except that it is built with a third or intermediate feed roll and is especially designed for gang ripping.

No. 8 is the same as No. 4, except that it is built with a third or intermediate feed roll and is especially designed for gang ripping.

The reliability and efficiency of Hoosier Rip Saws are known to woodworkers everywhere. They are made in the best possible manner.

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Lining, Veining and Artistry,
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Insures smooth and perfect workmanship.
Powerful for rapid production.
Flexible and light to handle.
Cannot be harmed by overloading.
Economical in power cost.

An unique machine of simple principle and construction that makes 30,000 R. P. M. a practical everyday proposition. Exhaust air keeps the bearings cold and permits continuous running without bearing trouble.

Send for complete description of this machine, also the "ONSRUD" Portable Router and the "ONSRUD" Stationary Arm Router.

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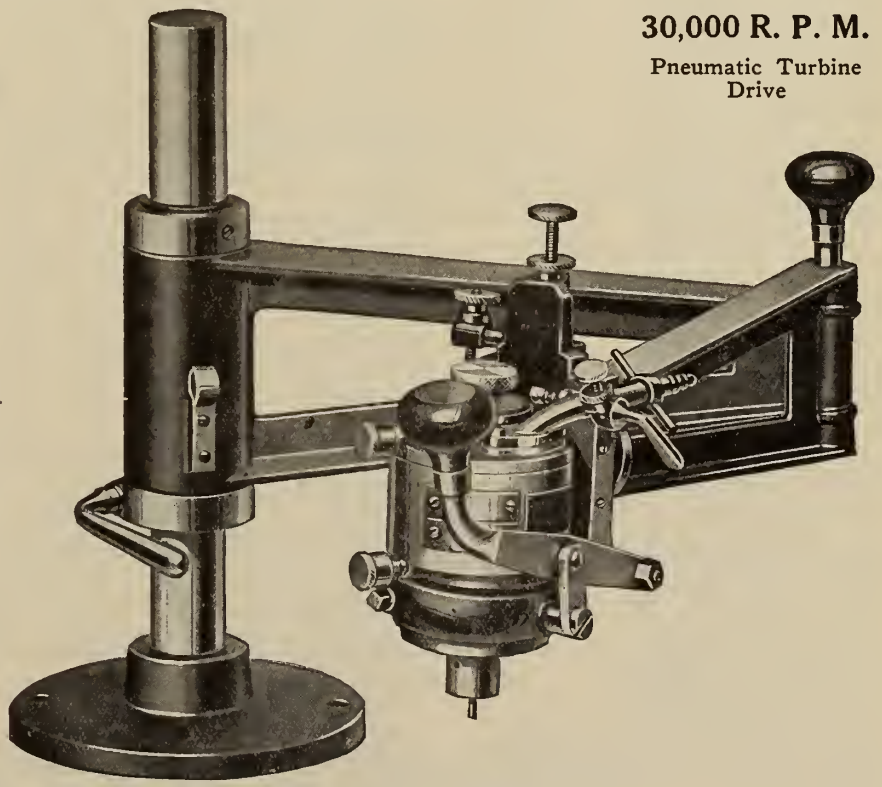
30,000 R. P. M.

Pneumatic Turbine Drive



"Onsrud" Radial Router, W-105

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Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Co. Preston, Ont.

DOWELS
Canada Wood Specialty Co. Ltd., Orillia, Ont.
Eaton & Sons, J. R. Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont.
Cutler Desk Co., Buffalo, N. Y.
Grand Rapids Vapor Kiln, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sidmans, London, Ont.
Standard Dry Kiln Co., Indianapolis, Ind.
Sturtevant, B. F. & Co., Galt, Ont.

DUST COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.

EDGERS (Single Saw)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

EDGER SAWS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

ELECTRIC GLUE POTS
Sepco Automatic Electric Heaters Toronto, Ont.

ELECTRIC MOTORS AND EQUIPMENT
Lancashire Dynamo & Motor Co., Toronto,
Montreal Electric Co., Montreal ,
Northern Electric Co., Montreal, P. Q.
Sturtevant, B. F. & Co., Galt, Ont.

ELEVATOR EQUIPMENT
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

ENAMELS
Cosmos Chemical Co., Port Hope, Ont.
Denny Hillborn & Rosenbach, Chicago, Ill.
Marietta Paint & Color Co., Marietta, Ohio

END MATCHING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

EXHAUST HEADS
Sturtevant, B. F. & Co., Galt, Ont.

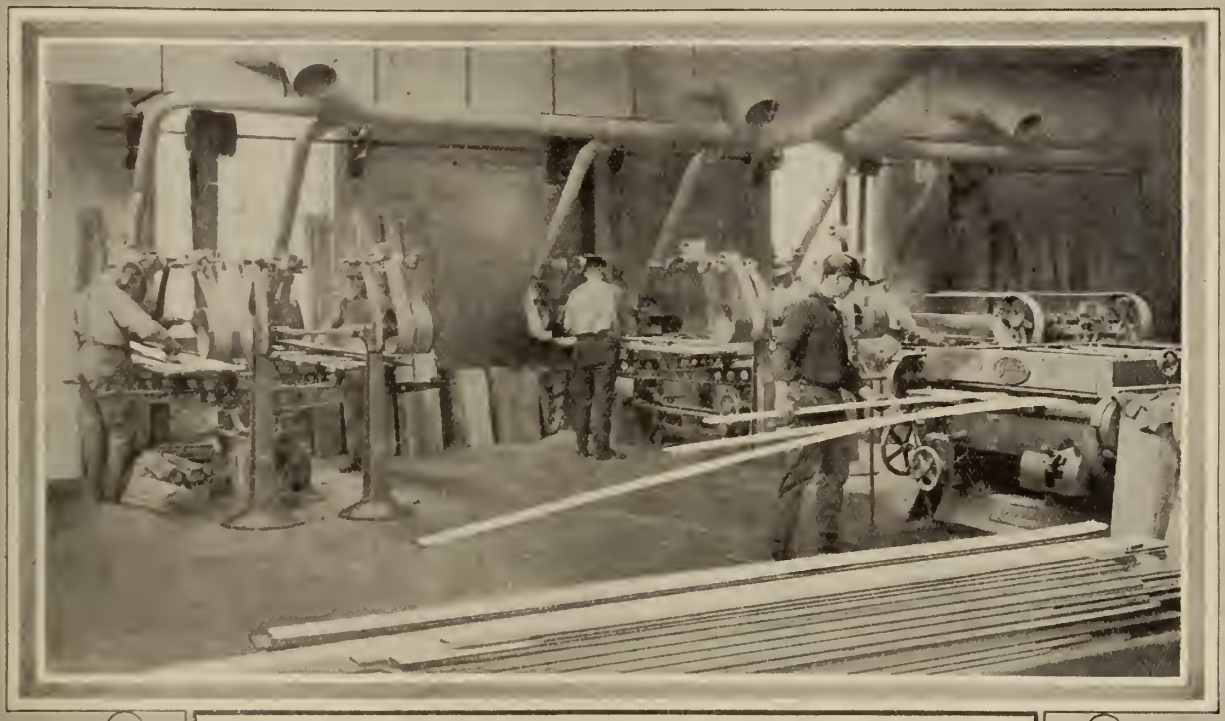
EXHAUST SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

FEED ROLLS
Atkins & Co., E. C. Hamilton, Ont.

FIBRE PRODUCTS
Carter, E. T. Toronto, Ont.
Walter, John & Sons Limited, Kitchener, Ont

FIR DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

FIRE ALARM SYSTEMS
Northern Electric Co., Montreal, Que.



Where All Sanders Will Agree

OPERATORS of sanding machines may disagree as to sanding methods and they may differ in their choice of machines.

But where they all agree is on the qualities a garnet paper or cloth must have.

They are all agreed that a garnet paper or cloth must be coated with a pure, clean garnet grain that is sharp, tough, uniform.

They are all agreed that garnet products should be fast cutting, flexible, durable—standing up to the work without cracking or peeling—producing more work—better work.

For just these reasons hundreds of sanders in every big woodworking center recognize that—

Carborundum Brand Garnet Products Make Good Sanders Better Sanders

GLAD TO PROVE IT ANY TIME WITH A TRIAL

The Carborundum Company

Niagara Falls, N. Y., U. S. A.

New York, Chicago, Boston, Philadelphia, Cleveland, Detroit, Cincinnati, Pittsburgh, Grand Rapids, Milwaukee

Canadian Woodworker" Buyers' Directory—Continued

FIRE DOOR EQUIPMENT
Taylor Forbes Co., Guelph, Ont.

FIRE PREVENTION APPARATUS
Bennett & Wright Co., Toronto, Ont.

FIRE EXTINGUISHERS
Pyrene Mfg. Co., Toronto, Ont.

FLOORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FRICTION CLUTCHES
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N. Y.
Herman Behr & Co., Inc., Brooklyn, N.Y.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).
Canada Glue Co., Brantford, Ont.

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GLUE
Canada Glue Co., Brantford, Ont.
Canadian Wood Cement Co., Montreal, Que.
Casein Manufacturing Co., New York City
Dunn Co., of Canada, Thomas W. Montreal
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.
Sanderson Pearcy & Co., Toronto, Ont.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

GLUE HEATERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE JOINTERS
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Simonds Canada Saw Co., Montreal, P.Q.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GROOVERS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Mattison Machine Works, Rochford, Ill.

GUM LUMBER
Hyde Lumber Company, South Bend, Ind.
Kirby Bonner Lumber Co., Houston, Texas
Merceau-Hawkins Tie Co., Huntington, W. Va.
Sondheimer Co., E., Sondheimer, La.
South Texas Lumber Co., Houston, Texas
Toronto Hardwood Lumber Co., Toronto, Ont.

HAND SCREWS
Fay & Egan Co., J. A. Cincinnati. Ohio.
Superior Hand Saw and Clamp Co., Grand Rapids, Mich.

HANGERS
Bond Engineering Works, Toronto, Ont.
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

HANDLE & SPOKE MACHINERY
Fay & Egan Co., J. A. Cincinnati. Ohio.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Nash, J. M., Milwaukee, Wis.

HARDWARE
Larsen & Shaw Ltd., Walkerton, Ont.

HARDWOOD LUMBER

American Plywood Corp., New London, Wis.
Anderson, Shreiner & Mawson, Toronto, Ont.
Atlantic Lumber Company, Toronto, Ont.
Bedna Young Lumber Co., Jackson, Tenn.
Banning, Leland G., Cincinnati, Ohio.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Canadian General Lumber Co., Toronto, Ont.
Des Moines Sawmill Co., Des Moines, Iowa
Hyde Lumber Co., Memphis, Tenn.
Heeney, Percy E. Kitchener, Ont.
Kirby Bonner Lumber Co., Houston, Texas
Kneeland-Bigelow Co., Bay City, Mich.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Louisville Point Lumber Co., Louisville, Ky.
Long-Bell Lumber Co., Kansas City, Mo.
McDonagh Lumber Co., Toronto, Ont.
Luehrman Hardwood Lbr. Co., St. Louis, Mo.
Mercereau-Hawkins Tie Co., Huntington, W. Va
Mississippi Hardwood Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Oliver Lumber Co., Toronto, Ont.
Otis Mfg. Co., New Orleans, La.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Ritter Lumber Co., W. M. Columbus, Ohio.
Sondheimer Co., E., Sondheimer, La.
Stack Lumber Co., Escanaba, Mich.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Stimson & Co., J. V., Owensboro, Ky.
Terry-Nicholson-Cates Ltd., Toronto, Ont.
Toronto Hardwood Lumber Co., Toronto, Ont.
Wood Mosaic Co., Louisville, Ky.
Willey Co., C. L. Chicago, Ill.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HARDWOOD LUMBER (Kiln Dried)
Rathbone, Geo. Ltd., Toronto, Ont.

HARDWOOD FLOORING
Eaton & Sons J. R. Orillia, Ont.

HEATING SYSTEMS

Canadian Blower & Forge Co., Kitchener, Ont.
Taylor Forbes Co., Guelph, Ont.
Toronto Blower Co., Toronto, Ont.

HOISTING EQUIPMENT
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

JOINTERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Hay Knife Co., Peter, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shimer Cutter Head Co., of Can. Ltd., Galt.
Simonds Canada Saw Co., Montreal, P.Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNOBS
Waddell Mfg Co., Grand Rapids, Mich.

LACQUERS
Cosmos Chemical Co., Port Hope, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

LEGS
Klise Manufacturing Co., Grand Rapids, Mich.

MAHOGANY
Otis Mfg. Co., New Orleans, La.
Toronto Hardwood Lumber Co., Toronto, Ont.

MACHINE KNIVES
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

METHYLATED SPIRITS
Canadian Industrial Alcohol Co., Montreal

MAGNOLIA
South Texas Lumber Co., Houston, Texas

MILL PIPING
Toronto Blower Co., Toronto, Ont.

MITRE SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS
Sturtevant, B. F. & Co., Galt, Ont.

MOTORS
Lancashire Dynamo & Motor Co., Toronto,
Northern Electric Co., Montreal, Que.
Sturtevant, B. F. & Co., Galt, Ont.

MOTOR PULLEYS
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati. Ohio.
Nash, J. M., Milwaukee, Wis.

NAILING MACHINES
Yates Machine Co., P. B., Hamilton, Ont.

OAK FLOORING
Rathbone, Geo. Ltd., Toronto, Ont.

PAINT
Marietta Paint & Color Co., Marietta, Ohio.
Sanderson Pearcy & Co., Toronto, Ont.

PAINT DRYERS
Sanderson Pearcy & Co., Toronto, Ont.

PAINT SPRAYING EQUIPMENT
DeVilbiss Mfg. Co., Toledo, Ohio

PANELS
Hay & Co., Woodstock, Ont.
Pannill Door Co. Ltd., Toronto, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PATTERN PINE
Rathbone, Geo. Ltd., Toronto, Ont.

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

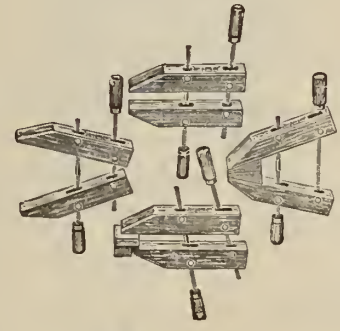
We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co.
LIMITED
Orillia, Ontario
Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

The "JORGENSEN"

Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws



The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."

"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

Manufactured only by the

Adjustable Clamp Company
216 N. Jefferson St., Chicago, U.S.A.

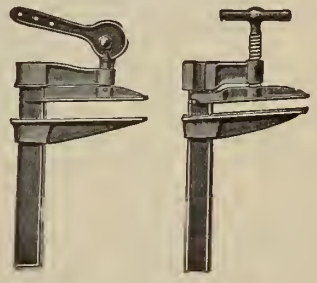
For Sale By

Aikenhead Hardware Limited .....Toronto
Lewis Bros., Limited .....Montreal

Colt's Clamps

for the

Woodworker

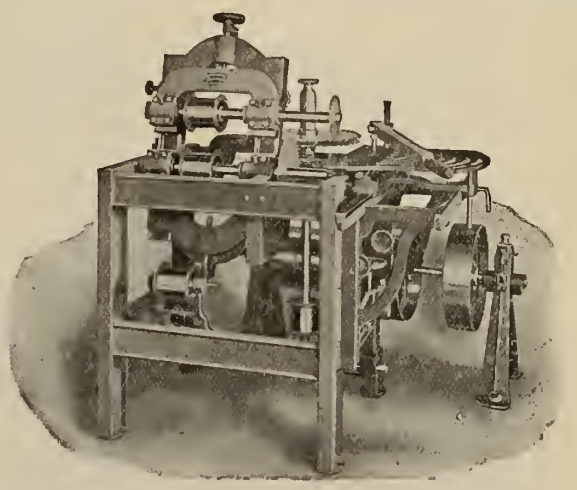


Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

For further information write for Catalogue No. 294.

Batavia Clamp Co.
235 Centre St. BATAVIA, N. Y.



No. 20 Large Saw Tenoner

The finest machine made for all jointing and halving in wood shops and for automobile and carriage woodwork. Also gives a nice smooth tenon on door, window, sash, furniture and all kinds of cabinet work. Is used for halving and jointing stock at any angle.

Tenoners are equipped with flexible coupling for direct motor drive or countershaft.

Also made in No. 19 Small Saw Tenoner.

No. 19 Small Saw Tenoner.
No. 20 Large Saw Tenoner.
No. 21 Regular Bevel Saw.
No. 22 Large Bevel Saw.
No. 23 8½ Irregular Dresser.
No. 24 6" Irregular Dresser.
We also manufacture metal working machines.

Write for catalogue

Pettingell Machine Co.
Amesbury, Mass.

Mention Canadian Woodworker

"Canadian Woodworker" Buyers' Directory—Continued

PLANING MILL MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
General Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Toronto Blower Co., Toronto, Ont.
Williams Machinery Co., A. R. Toronto, Ont. Preston, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corp., New London, Wis.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

POWER APPARATUS
Northern Electric Co., Montreal, Que.

POWER & LIGHT PLANTS
Fischman Spring Co., Kitchener, Ont.

POWER TRANSMISSION MACHINERY
Bond Engineering Works, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PRESSES (Veneer)
Bond Engineering Works, Toronto, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin, Wm. R. Toronto, Ont.

PULLEYS
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PUMPS—Condensation and Return
Canadian Blower & Forge Co., Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

RATTANS
Carter, E. T., Toronto, Ont.

REEDS
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RETORTS
Perfection Wood Steaming Retort Co.,

REVERSIBLE PLANING MILL FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FELLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SANDPAPER
Behr & Co.. Herman, Brooklyn, N. Y.
Canada Glue Co., Brantford, Ont.
Carborundum Co., Niagara Falls, N.Y.
Sanderson Pearcy & Co., Toronto, Ont.

SASH DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW FILING EQUIPMENT
Taylor Forbes Co., Guelph, Ont.
Wordwell Mfg. Co., Cleveland, Ohio.

SAW SHARPENERS
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
General Machinery Co., Toronto, Ont.
Cowan & Company, Galt, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

SHAFTING
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.
Bond Engineering Works, Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co.. Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

SHELLAC
Marietta Paint & Color Co., Marietta, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

SINGLE SPINDLE BORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co.. Toronto, Ont.

SOFTWOODS
Big Bear Lumber Co., Toronto, Ont.
Canadian General Lumber Co., Toronto, Ont.
Rathbone, Geo., Limited, Toronto, Ont.
Heeney, Percy E. Kitchener, Ont.
Luehrman Hardwood Lumber Co. Chas. F., St. Louis, Mo.
Terry-Nicholson-Cates Ltd., Toronto, Ont.

SPRINGS
Ideal Fence & Spring Co., Windsor Ont.

SPRING MATTRESSES
Fischman Spring Co., Kitchener, Ont.

SPRING CONSTRUCTION
Fischman Spring Co., Kitchener, Ont.

SPROCKETS
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

SPRUCE DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM & OIL SEPARATORS AND REFINERS
Smart-Turner Machine Co., Hamilton, Ont.

STEEL BALLS
Canadian SKF Co., Toronto, Ont.

STEEL PLATE PLANING MILL EXHAUST
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

STEEL PRESSURE BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE RIMS
Bruce Woodworkers Limited, Chesley, Ont.

TABLE SLIDES
Bruce Woodworkers Limited, Chesley, Ont.
Watertown Table Slide Co., Watertown, Wis.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

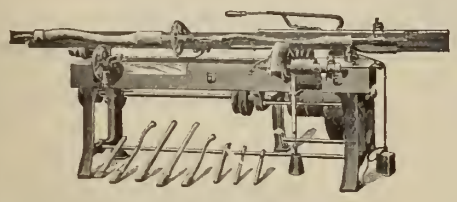
TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Pettingell Machine Co., Amesbury, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Klotz Machine Co's
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

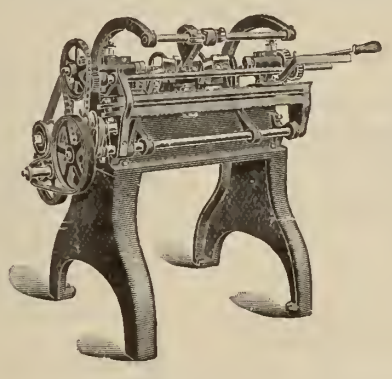
We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

MANUFACTURED BY

Klotz Machine Co., Sandusky, O., U. S. A.

Write for descriptive circulars and prices.

HANDLE MACHINERY



for

GREATEST PRODUCTION

at

LOWEST COST USE

"OBER"

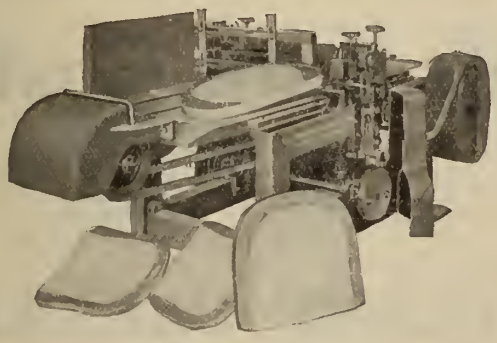
TURNING LATHES, RIPSAWS, SANDERS, CHUCKING MACHINES, etc.

We make machines for turning Axe, Pick, Sledge Hammer, Hatchet, Fork, Rake, Broom, Chisel, File, Knife handles, etc.

Write for free catalogue No. 31.

The Ober Mfg. Co.

Chagrin Falls, O., U.S.A.



McKnight No. 1 E

CONTINUOUS AUTOMATIC SADDLE SEAT MACHINE

Machine is arranged for saddling or scooping seats of any desired size or shape. Eliminates hand scraping and considerable sanding. Machine cuts six, eight, or ten seats per minute —depending upon material used.

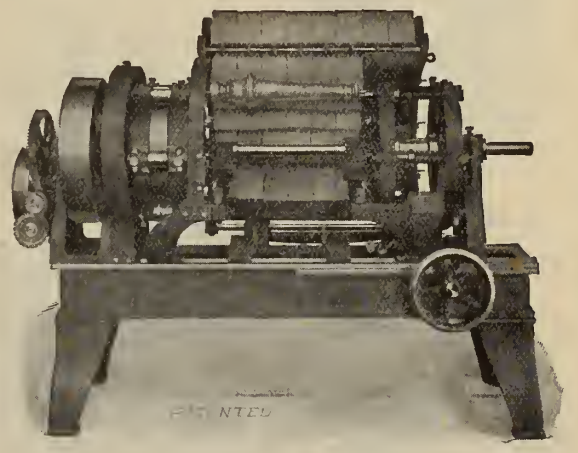
Let us tell you more about it.

L. G. McKnight & Son Co.

CHAIR MAKING MACHINERY

GARDNER, MASS., U.S.A

IS IT WISE



to continue sanding your furniture turnings by hand when there is a Sander on the market that can sand them better, more rapidly and at less expense?

J.M.NASH, Milwaukee, Wis.

"Canadian Woodworker" Buyers' Directory—Continued

TRUCKS
National Dry Kiln Co., Indianapolis, Ind.

TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

TURNED WOOD GOODS
Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TURPENTINE
Carter, E. T., Toronto, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

TWIST WORK
Klise Manufacturing Co., Grand Rapids, Mich.

TWISTING AND FLUTING MACHINES
Shawver Co., Springfield, Ohio

UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

VACUUM PUMPS
Canadian Blower & Forge Co., Kitchener, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

VARNISH
Marietta Paint & Color Co., Marietta, Ohio
Sanderson Percy & Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Acme Veneer & Lumber Co., Cincinnati, O.
American Plywood Corp., New London, Wis.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Hartzell, Geo. W., Piqua, Ohio.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Nickey Bros., Memphis, Tenn.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER DRYERS
Nichols Company, A. S. New York, N.Y.

VENEER SAWS
Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin, William R. Ltd.
Preston Woodworking Machinery Company, Preston, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WALNUT LUMBER
Des Moines Sawmill Co., Des Moines, Iowa.
Hartzell, Geo. W. Piqua, O.
Kirby Bonner Lumber Co., Houston, Texas
Toronto Hardwood Lumber Co., Toronto, Ont.

WASTE
Carter, E. T., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Pettingell Machine Co., Amesbury, Mass.

WOOD STEAM RETORTS
Perfection Wood Steaming Retort Co., Parkersburg, W. .Va
Shawver Co., Springfield, Ohio

WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.

Speed + Perfect Joints = Low Costs

REGD. U.S. PAT. OFF.
The Taylor TRADE MARK

CLAMP CARRIER
for
Small Jobs in the Big Plant
All Jobs in the Little Plant

1. Natural standing position of operator.
2. No Juggling of heavy clamps.
3. No bending or walking.
4. No pile to overturn to get work glued first—simply move clamp one section.
5. Less space than equal number of clamps with work in, piled on the floor.

Any size to suit your work. 8 and 12-section wheel type. 16, 20, 30 and 40-section chain type. 4, 5 or 6 clamps per section for stock up to 42-in. wide.

Representatives:
A. R. Williams Machinery Co., Toronto. Canada

James L. Taylor Mfg. Company
Poughkeepsie, N.Y., U.S.A.

MACHINERY FOR SALE

New C.M.C. No. 19 Sash-Clamp, Capacity 6-5 x 4-6	$150.00
Cowan & Co. Automatic Hollow Chisel, Mortiser No. M189	200.00
Cowan & Co. Power Mortiser, M3	50.00
Shimer & Co. Matcher Head Grinder	100.00
Smith & Phillips No. 3 Window Frame Machine	350.00
Hermance Moulder, 8"	650.00
Lucas Belt Sander, No 426 & 3 H.P. Westinghouse Motor	800.00
Shimer Heads for 1 7/16, 1 Pr ⅞ Flooring 6 Bits	40.00
1 Pr. 1¼ Flooring 4 Bits	30.00
1 Pr. ⅞ V Sheeting 4 Bits	35.00
1 Pr. 3", 2 Knife Heads	25.00

71 Feet 2 3/16 Steel Shaft and 7 hangers.
24 Feet 2 ⅜ shaft
3 Iron puleys 2 3/16 bore 10" x 30"
1 " " 8" x 24"
1 " " 8" x 40"
1 Wood spllit pulley 17" x 36"
1 " " " 9" x 36"
1 " " " 10" x 32"
1 " " " 7" x 26"
2 " " " 12" x 24"
1 " " " 9" x 24"
1 " " " 12" x 22"
1 " " " 10" x 22"
2 " " " 10" x 20"
1 " " " 4" x 20"
1 " " " 9" x 16"

Less 50% off List Price

GEORGE RATHBONE LTD.

Northcote Ave., Toronto

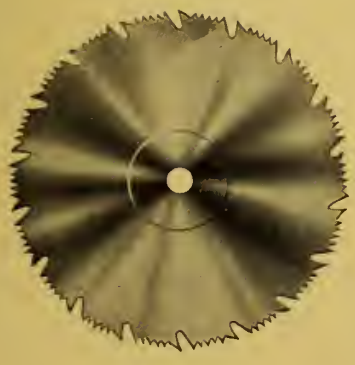
ATKINS

STERLING QUALITY

SAWS and KNIVES

ECONOMIZE

ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing



Atkins Sterling Quality Saws

and Machine Knives

Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.

Write to-day for our Knife Booklet "C.W." and Pattern Template Paper.

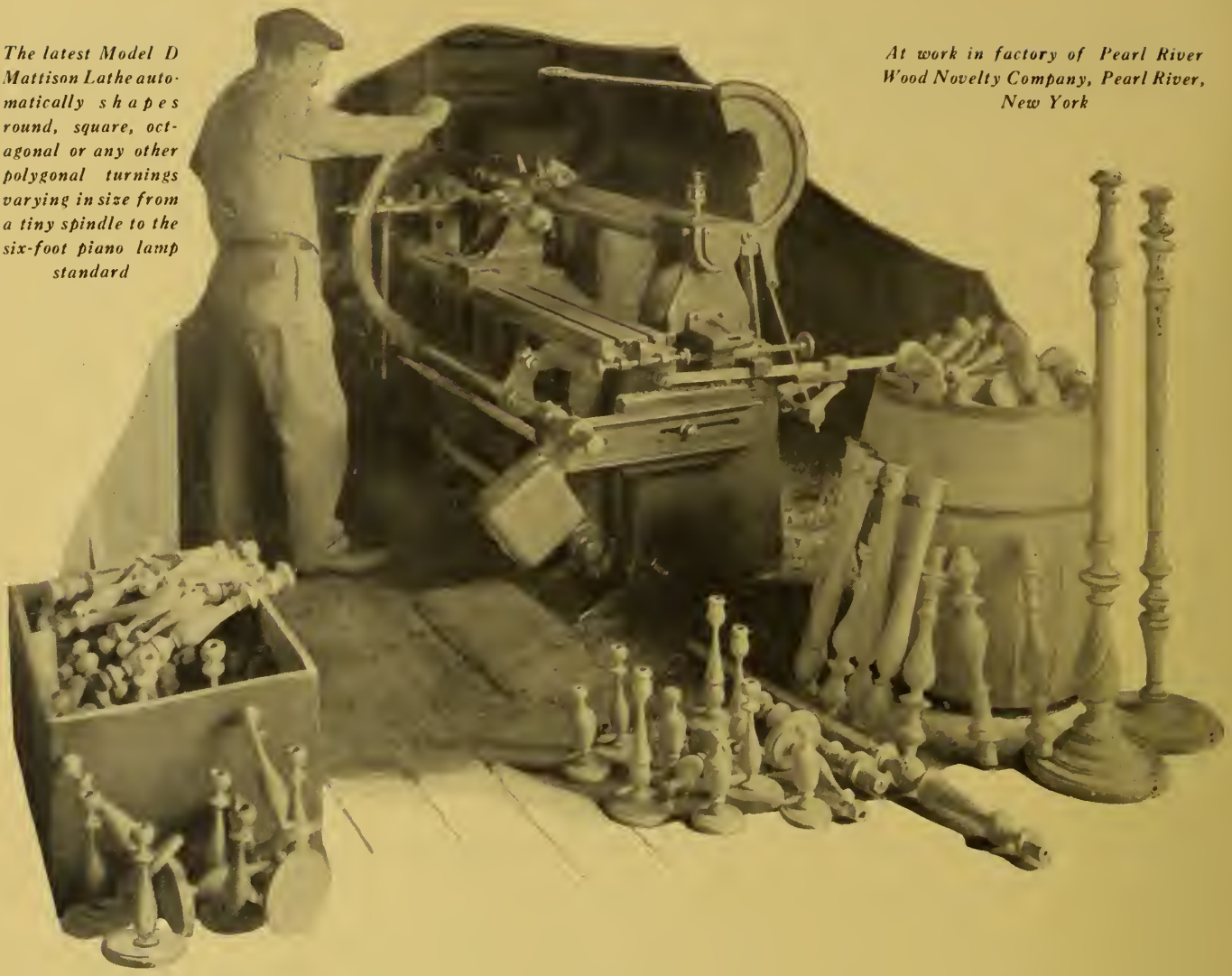
E.C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

The latest Model D Mattison Lathe automatically shapes round, square, octagonal or any other polygonal turnings varying in size from a tiny spindle to the six-foot piano lamp standard

At work in factory of Pearl River Wood Novelty Company, Pearl River, New York



The Standard Machine Turner

MORE than 3,000 Mattison Lathes of our different models have been installed. All the leading manufacturers have standardized on it for their turned work, and it is one of the first machines to be given consideration in equipping new furniture factories.

It is as thoroughly practical for the small manufacturer as the large one, because it is capable of handling small lots of turnings economically. The simplified cutterhead system enables the ordinary mechanic to prepare his knives without difficulty.

If you use turnings and are still employing hand-lathe or band-saw methods or antiquated turning machines, this greatly improved and refined Model 57-D Mattison Lathe will save you money, material, labor; increase the scope of your designer; and enable you to produce your turned work on an equal basis with your largest competitor.

The Improved Chuck

The hollow chuck attachment for the new Model D Mattison Lathe has been greatly simplified over any arrangement of this nature used hertofore on any turning machine. It works faster; can be attached or removed by one man; has automatic centering device which saves stock on some turnings; its locking device holds the turning firmly without danger of chuck jaws loosening, no matter in which direction the stock is revolved.

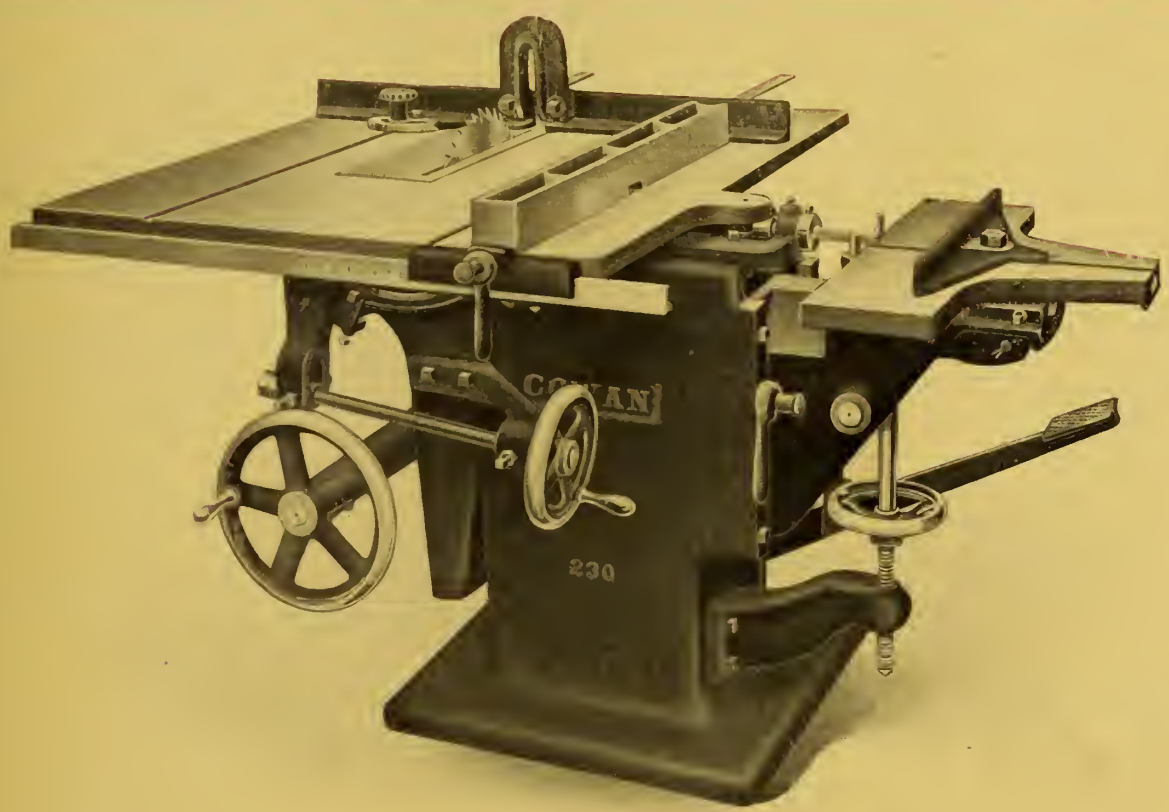
MATTISON MACHINE WORKS

Main Office and Works:—Rockford, Illinois

Instead of spending money needlessly for your turnings invest in this Lathe and let it save for you that extra margin of profit which now goes for high-priced labor, or to the outside job shop. Send for new illustrated bulletin No. 57D.

Volume Twenty-Three TORONTO, DECEMBER, 1923 Number 12

CANADIAN WOODWORKER and Furniture Manufacturer



VARIETY SAW 230

Ball or Babbitt Bearings

Made with or without Hollow Chisel Mortising and Boring Attachment

For fine accurate cutting. Requires little power. Adjustments quickly and easily made. Low in price.

Tilting Table 36″ x 44″. Ball Bearing Raising Screw. Rip Fence adjusts 16″ either side of saw. Square and angle cut off gauges.

Will Mortise ¼″ to ¾″, 3″ deep. Motor drive direct on spindle or by belt.

COWAN & COMPANY OF GALT LIMITED

GALT, ONTARIO, CANADA

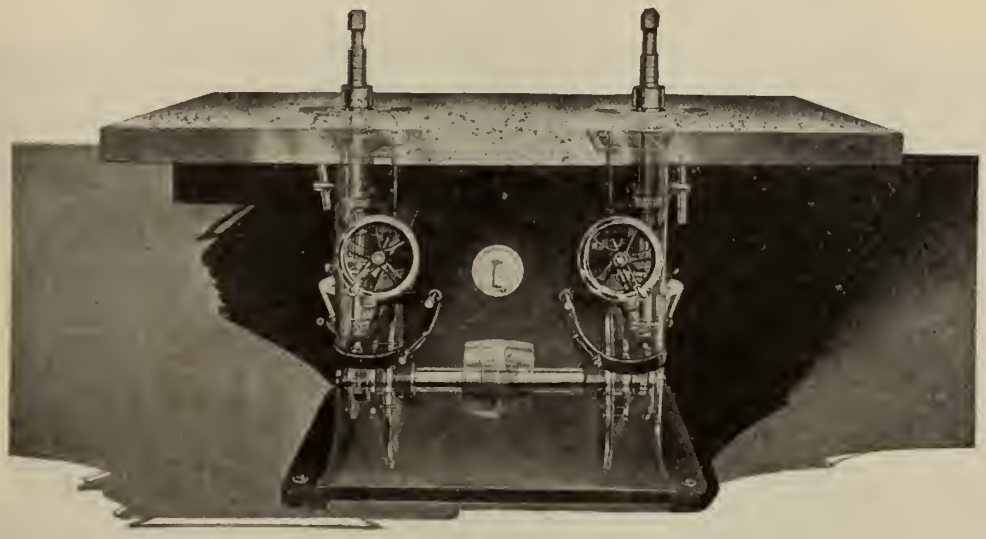
"The Pioneer and Always the Leading Canadian Builders of Woodworking Machinery"

Alphabetical Index to Advertisers, Page 12

May all your Ships come in—in 1924

THE CANADIAN INDUSTRIAL ALCOHOL
COMPANY, Limited

SKF



Ball Bearings Permit and Maintain
High-Spindle Speed with Accuracy and Low Power Consumption

SHAPER operators know that if there is friction in the shaper bearings sufficient to cause wear and misalignment, the consequent vibration soon becomes a potent force of destruction which rapidly ruins the serviceability of the shaper. When self-aligning ball bearings are used the inner race tilts with the shaft and the bearing can never bind.

Spindles thus equipped require less power, run smoothly and silently, and remain *absolutely true*. As a result, the worker can do his work more easily and obtain a greater output. At the same time his machine is not subject to frequent shutdowns. Ball bearings eliminate the wearing, rubbing friction which causes burnt-out bearings and an endless round of troubles that lower production and eat up profits.

See that *all* your shapers are equipped with **SKF** marked ball bearings. They effect remarkable savings in power, belts, time and labor, and enable the tools to maintain high speed with lower power consumption.

CANADIAN **SKF** COMPANY, LIMITED
TORONTO MONTREAL

Normal View *Deflected View*

No. 272 Oscillating Belt Sander

No. 272. Oscillating Belt Sander for Edged and Shaped Work

This style of belt sander has a capacity several times greater than sanding drums or spindles. The high speed sand belt covers a long surface and retains its sharp and fast cutting properties. The long travel of the belt gives it an opportunity to cool off between contacts, whereas on drums and spindles, where the sanding surface is small, the wear is continuous and in one place.

It will also finish practically any piece of straight or bent work that can be supported on the tables or held against the platen or sanding rolls.

The design and construction eliminates all chance of vibration, thus insuring a perfect sanding contact. The tables provide an even and accurate support for the work, and as the belt travels with an oscillating movement, a perfect finish is assured.

The tables are the proper height and permit the operator to handle his work in a natural position. Numerous sizes of sanding rolls, special forms for shaped work and non-revolving sanding spindles may be used for sanding a large variety of work. The long platen between the sanding pulleys may be removed and replaced with special forms for any work having rounded edges.

This sander is so constructed that a number of stationary forms may be used for special work.

Features of Our No. 272 Oscillating Belt Sander

Heavy construction eliminates vibration.

Long belt surface prolongs life of sand belt.

Oscillating movement prevents scratch marks.

Belt pulleys covered with heavy coating of rubber provide a good driving surface and a perfect sanding cushion.

Large tables and each adjusted independently of the other.

S.K.F. ball bearings in small belt pulley.

Improved belt tightening device.

Convenience of operation.

Large capacity.

Very moderate price.

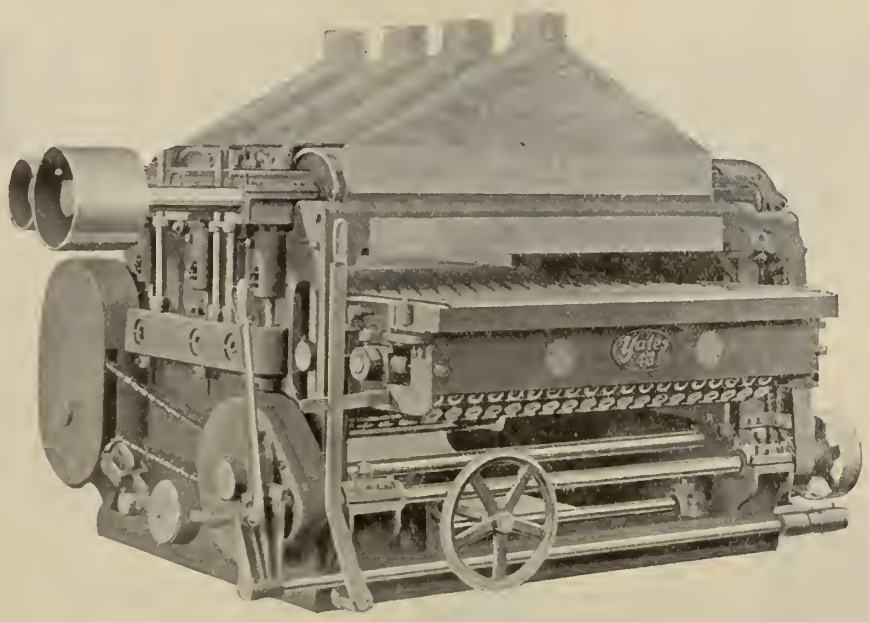
Large descriptive circulars now ready. Send for one and get full particulars on this Sander.

Specifications:

Large Sand Belt Pulley	14" dia. x 8½" face
Small Sand Belt Pulley	3½" dia. x 8½" face
Circular Table	25" wide
	11" from spindle to end
	19" long overall
Long Table	72" x 12"
Platen	60" long 9½" wide
Centre to centre of pulleys	72"
Idler Pulley	10" dia. x 9" face
Floor Space	8' x 3' 6"

Jackson, Cochrane & Company

Manufacturers of Woodworking Machinery : KITCHENER, ONTARIO



Advantages that will Appeal to Users of Sanding Machines

Sand paper on the drums can be tightened up at each end independently or simultaneously. This is a great help when putting on the paper as it saves considerable time.

Should the paper become loose on the drums while machine is in operation, slack is taken up automatically, thus preventing paper buckling or tearing, which affords a saving in the sand paper used. The felt and paper are wound on the drums spirally, which gives you continuous cutting drums, furnishing a much smoother finish.

These are exclusive feautres embodied in Yates Endless Bed Sanders only.

Has automatic stop to prevent bed from running up into sanding drums. Yates Endless Bed Sanders are adapted especially for sanding narrow and short stock, taking pieces short as 3 inches. Will handle the big stock as well.

Built in three sizes 31, 43 and 49 inches wide.

Our Sander book describes this machine fully, as well as showing many different types and outlining their various uses.

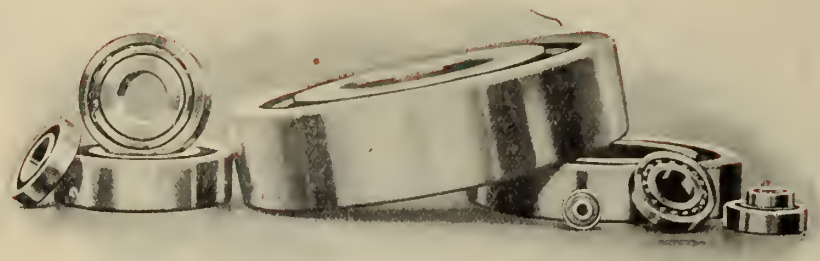
P. B. Yates Machine Co. Ltd.

Hamilton - Ontario

The Invariable Choice Yates Of the Man Who Knows

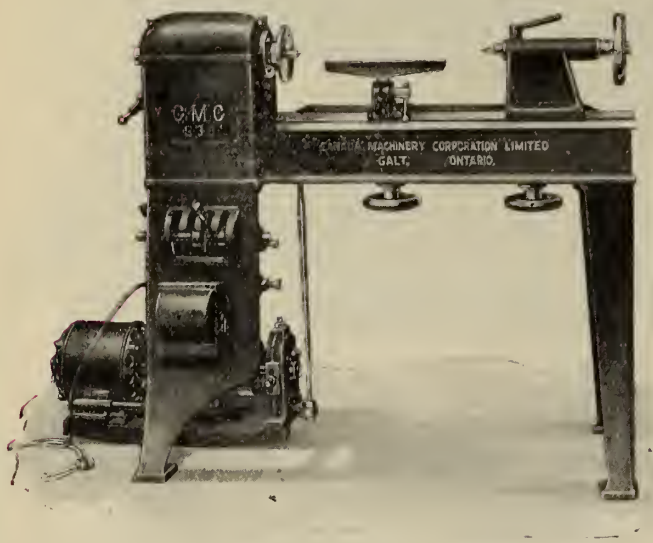
YATES

The Invariable Choice Yates Of the Man Who Knows



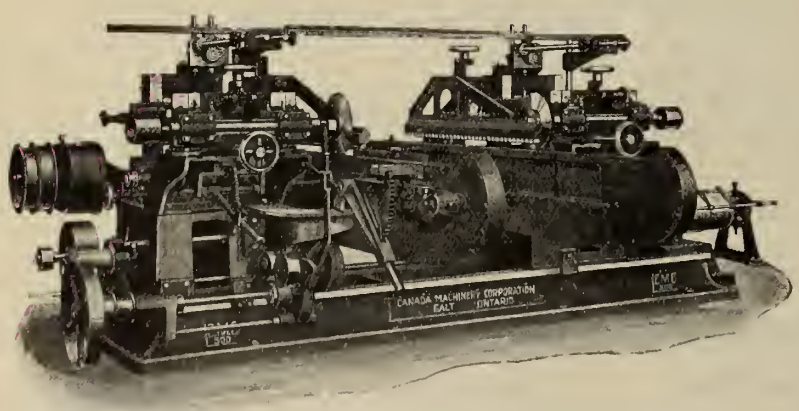
BALL

WE ARE PREPARED to furnish, amongst others, the following machines, equipped with ball or roller bearings.

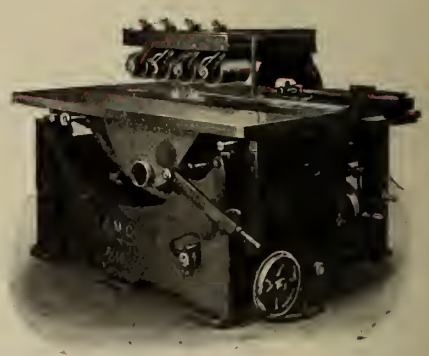


No. 838 Manual Training Lathe

- Planers
- Revolving Bed Sanders
- Roll Feed Sanders
- Belt Sanders
- Double End Tenoners
- Single End Tenoners
- Rip Saws
- Variety Saws
- Self Feed Rip Saws
- Straight Edgers
- Band Saws
- Band Re-saws
- Single Spindle Shapers
- Double Spindle Shapers
- Jointers
- Manual Training Lathes, etc.



No. 500 Double End Tenoner



No. 611 Straight Edger

"DID YOU EVER NOTICE HOW FEW "USED"

& ROLLER BEARINGS

BALL BEARINGS have so far demonstrated their friction and power saving qualities that it is now almost useless to further demonstrate the advantages of their employment to wood working machinery users.

ROLLER BEARINGS while newer, possess even greater friction eliminating qualities and while not so well known as yet, are rapidly coming to the fore. We can furnish interested woodworkers with the address of a number of firms that have had C. M. C. machines equipped with roller bearings in operation for considerable periods with marked success and with **no bearing trouble.**

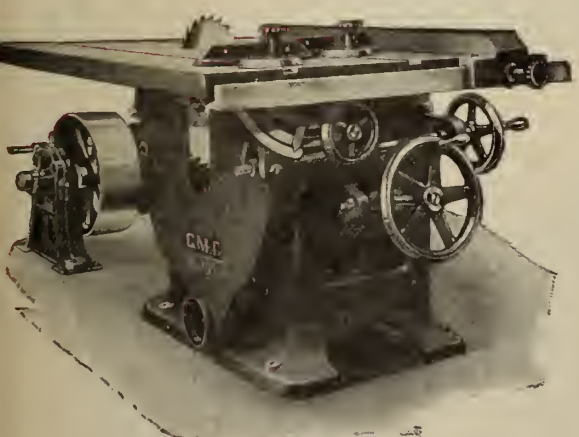
Any information on C. M. C. machines or information on the use of ball or roller bearings will be cheerfully furnished by our sales and engineering departments.

CANADA MACHINERY CORPORATION
LIMITED

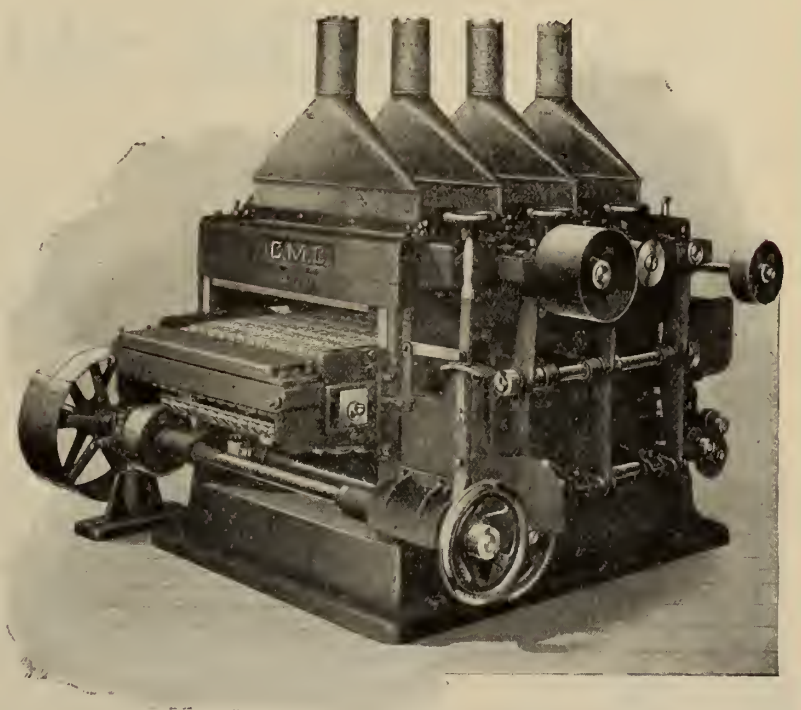
GALT — ONTARIO

Manufacturers of Iron and Woodworking Machinery

Toronto Sales Office - - - 721 Bank of Hamilton Bldg.



No. 629 Variety Saw



No. 400 Revolving Bed Sander

C. M. C. MACHINES ARE OFFERED FOR SALE"

Where are values to-day?

The insurance of your property is a matter of grave importance. It can be made on an economical, safe basis —if you have a Canadian Appraisal —or it can be the reverse, if you use book values, old appraisals, or an estimate of present worth.

Insurance protects values, not property. If you don't know exactly what those values are now, there is no possible means of insuring them safely or economically. This is a service in which we are eminently fitted to serve you.

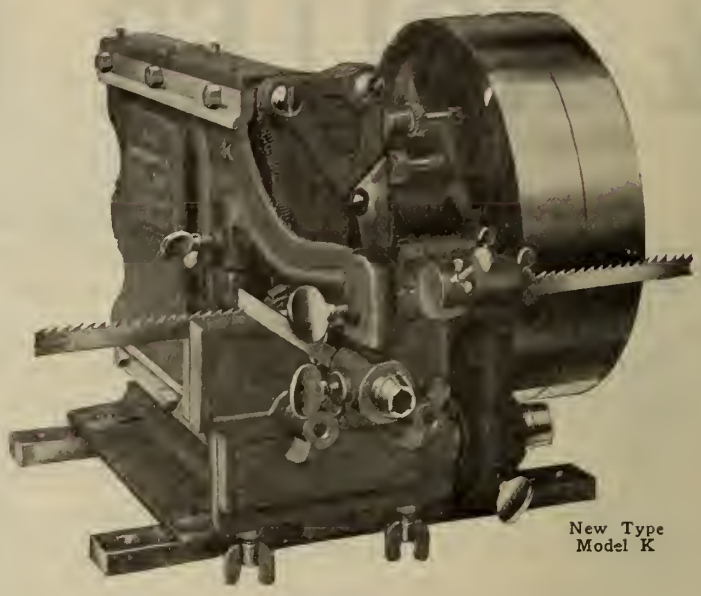
The Canadian Appraisal Co. Limited

364 University St., MONTREAL

TORONTO Royal Bank Bldg.

NEW YORK Equitable Bldg.

SAWS SHARPENED FOR FIVE CENTS



New Type Model K

ONE OPERATION Automatically FILES, SETS and JOINTS band saws at 70 Teeth a Minute. Compare This with Hand Work and

FIGURE THE SAVING

Mf'rs of Stretchers, Lap Grinders, Circular Saw Setters, Filers and Grinders, Band Saw Grinders, etc.

THE WARDWELL MFG. CO.

120 Hamilton Ave. Cleveland, O.

FOR SALE

We have a very large and varied stock of rebuilt Woodworking machines on hand. A few of these machines are as follows:-

SAW TABLES

Union Combination Saw table with jointer complete with motor.
Used Williams Dimension Saw Table.
Williams Varicty Saw Table with boring attachment.
Used Double Rip and Cut-off Saw, takes in 72 inch.

LATHES

Used Westcott Broom Handle Lathes.
Nash Broom Handle Sander.
Used 20" Wood Lathe.
Ober Axe Handle Lathe, used.

SHAPERS

Used 2 spindle Shaper, table 40 x 40.
C.M.C. 2 spindle Shaper, 39 x 52".
Used Cowan M. 93 Shaper 42 x 42".
Used C.M.C. Single Spindle Shaper.

TENONERS

Used Goldie McCulloch Tenoner with double copes.
Cowan SWINGING Arm Tenoner, double copes.
Used McGregor double copes, cut-off saw.

MOULDERS

Used 6" 3-side Goldie McCulloch.
Used 12" Cowan 4-side.
Used Hespeler, No. 303, 4-side Moulder.
Used No. 22 American 4-side Moulder.

MISCELLANEOUS

Used C.M.C. End Matcher.
Used Wysong & Miles type Belt Sanders.
Perrin Hydraulic Veneer Press.
Used 30" American Self Feed Jointer.
Used 36" No. 4½ American Cabinet Planer sectional rolls.
Used American 16" Jointers.
Used 32" Crescent Band Saw.

We have always on hand a very large stock of electric motors and lighting generators of all characteristics, for immediate shipment.

The A. R. Williams Machinery Co., Limited

Established 1878

64-66 Front St. W., Toronto **Phone Adel. 0020**

If it's Machinery—Write "Williams"

P · A · X

Private Automatic Exchange

ECONOMICAL

The Automatic Telephone

The P.A.X. is a time saver—a trouble saver and is built to last. Pays for itself in any plant.

The P.A.X. is the only rapid, easy and economical means of intercommunication between widely separated departmental heads of a business.

Business needs action. The turn of the dial gives action any time—all the time.

"A Pair of Wires and a Dial", telling of P.A.X. in operation is yours for the asking. Write our nearest House.

Northern Electric Company
LIMITED

MONTREAL TORONTO WINDSOR CALGARY
HALIFAX HAMILTON WINNIPEG EDMONTON
QUEBEC LONDON REGINA VANCOUVER

"Makers of the Nation's Telephones"

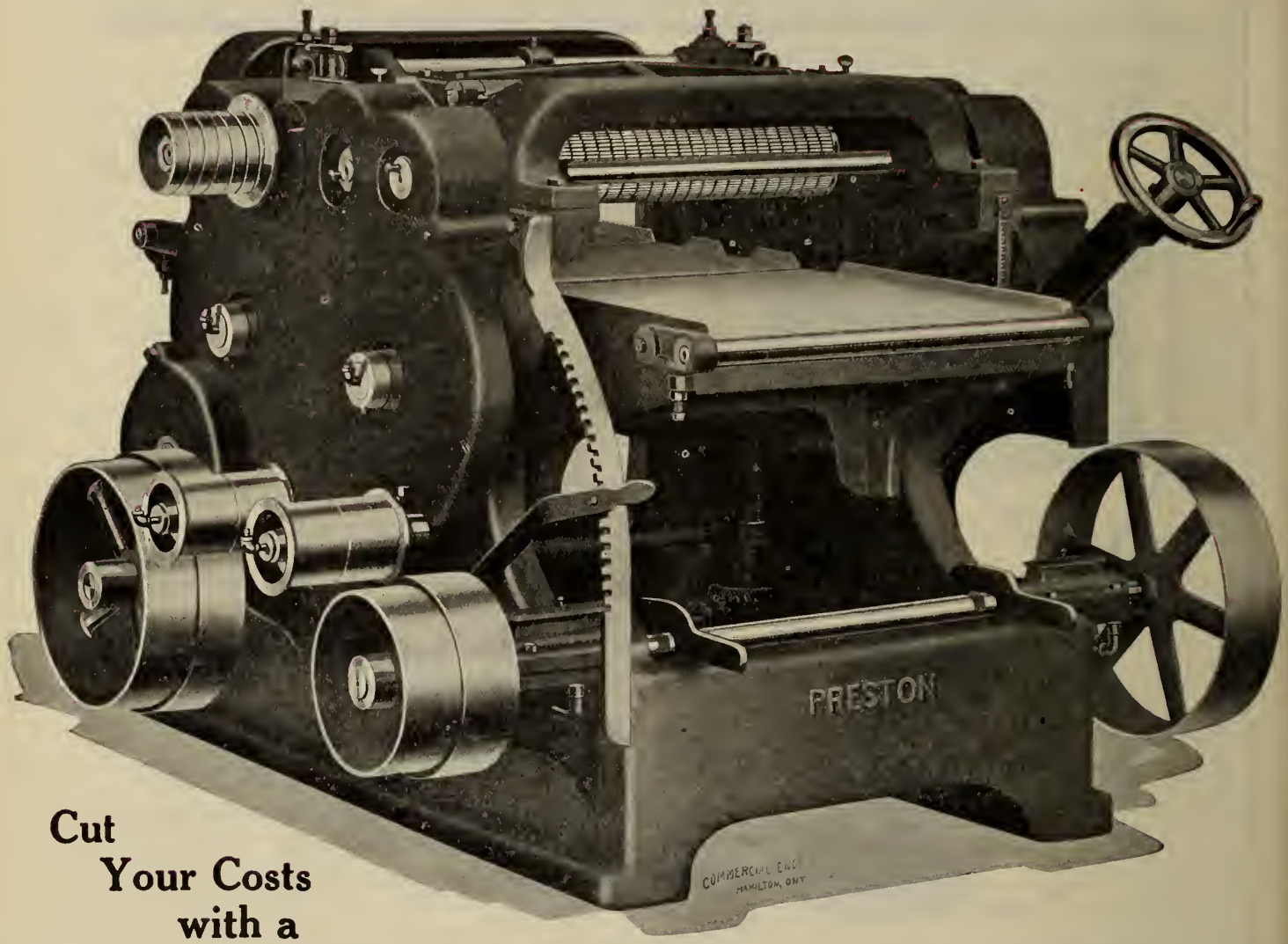
MANUFACTURING
Manual Telephones
Automatic Telephones
Wires & Cables
Fire Alarm Systems
Radio Sending and receiving Equipment

DISTRIBUTING
Construction Material
Illuminating Material
Power Apparatus
Household Appliances
Electrical Supplies
Power & Light Plants
Marine Fittings

FOR A PROSPEROUS AND

Take advantage of the increased output and lower costs to be Equipment and at the same time make your

TWO MACHINES FROM



Cut Your Costs with a

PRESTON HIGH SPEED BALL BEARING SURFACE PLANER—NO. 123

1. Special SKF Precision Ball Bearings.
2. Sectional Roll and Sectional Chipbreaker
3. Round cylinder with 4 high speed knives.
4. Stockbridge Knife Grinder and Jointer

INCREASES OUTPUT AND RESULTS IN REDUCTION OF ORDINARILY NECESSARY SANDING

TO ALL WOODWORKERS

The Preston Woodworking

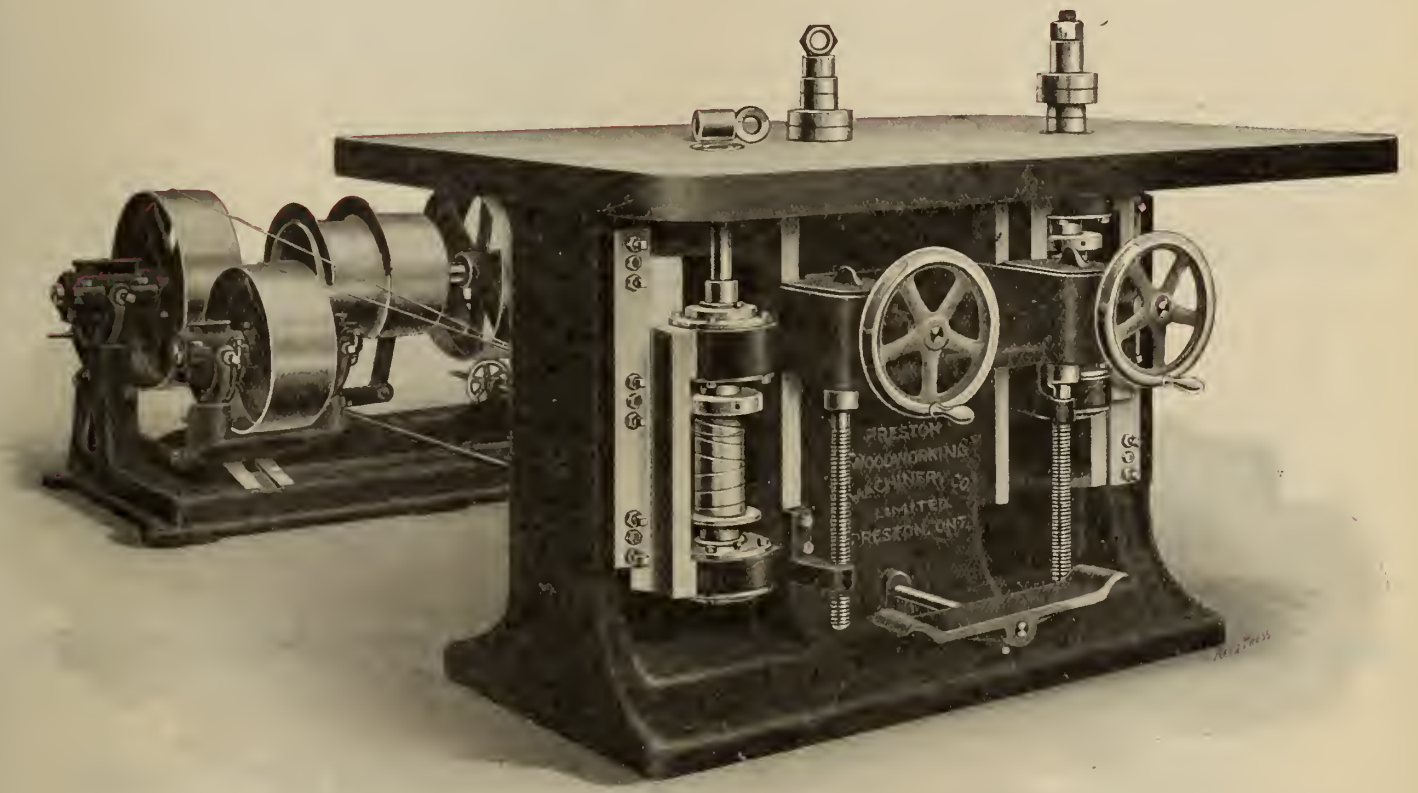
PRESTON,

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

PROFITABLE NEW YEAR

secured through the use of Preston Ball Bearing Woodworking workmen happier and more contented

THE "PRESTON" LINE



PRESTON HEAVY HIGH SPEED BALL BEARING SHAPER—No. 162

(May be had with either single or double spindle)

The ball bearings used in our shapers are specially designed to take care of all end thrust as well as to ensure long life and freedom from vibration at high speeds. The result is a high output of smoothly shaped work with a decrease in subsequent sanding and cleaning costs.

THIS MACHINE SHOULD SAVE *YOU* AT LEAST $5.00 A DAY

A MERRY CHRISTMAS

Machinery Company, Ltd.

ONTARIO

We are Sole Manufacturers of and Agents in Canada for the Eaglesfield Patented Beltless Swing Saw

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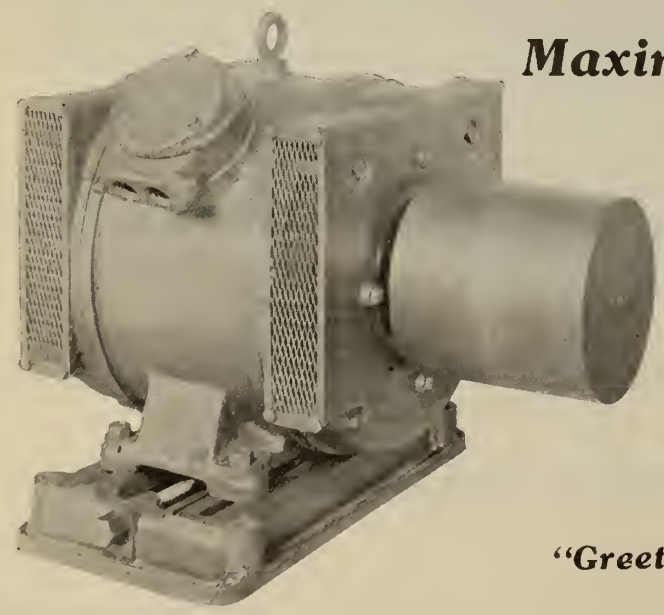


Maximum Efficiency Impossible if Motor is Clogged with Dust

Lancashire Enclosed Ventilated Type Induction Motors are so constructed that only pure, clean air passes through them. That is why they are free from the petty troubles usually associated with motors which operate in a dust-laden atmosphere. Save time, trouble and expense by standardizing on "LANCASHIRE."

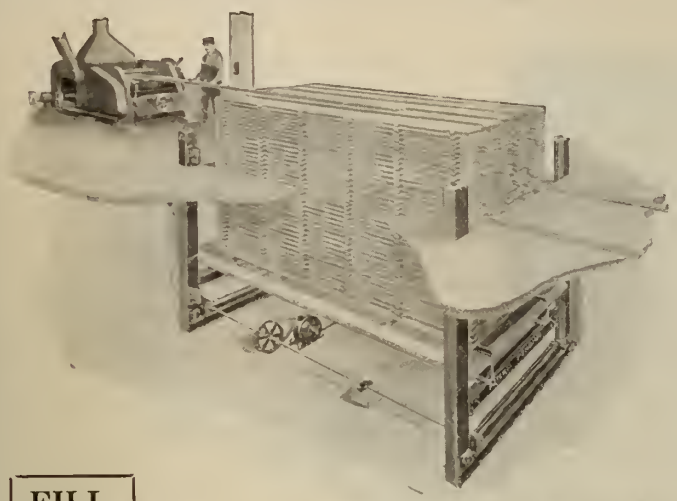
Full particulars upon request

"Greetings and Best Wishes to the Trade"

Lancashire Dynamo & Motor Co. of Canada, Ltd.

45 NIAGARA ST., TORONTO

275 Craig St. West, Montreal **Smith Robinson & Co., Vancouver**



The Leitelt Lumber Lift is one of the greatest developments in the wood working industry for the efficient handling of lumber in large bulk units. In design and construction it is in accordance with the best engineering and mechanical practice. Self contained and motor driven with automatic push button control and having four revolving screws with travelling nuts. The Leitelt Lumber Lift is widely recognized as embracing these essential features: efficiency, simplicity, safety, strength and durability.

The Leitelt Lumber Lift is built in two sizes, capacity being governed by travelling requirements, varying from one to twenty tons.

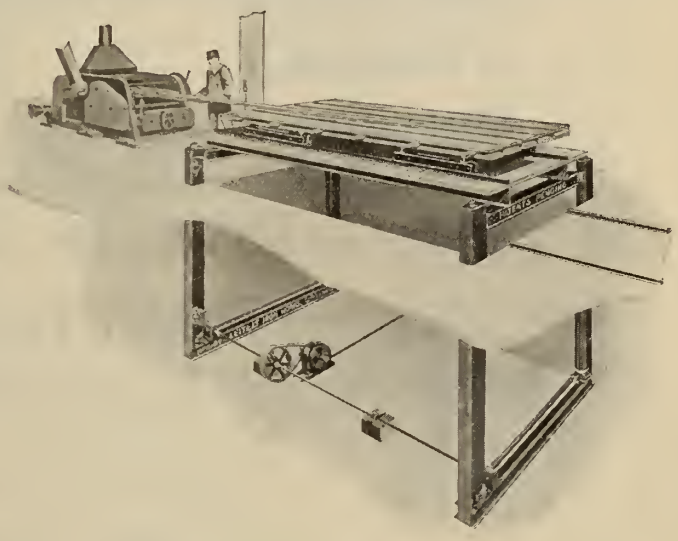
FILL OUT AND MAIL

LEITELT LUMBER LIFT

Fill Out and Mail

Fill out the questionnaire below and mail to us so that our Engineering Department will be able to give you the best advice regarding your problem.

The Grand Rapids Vapor Kiln are agents for this profit-multiplying mechanism and because of our location in Grand Rapids we are enabled to give the best service on these installations. Such lift installations have the personal attention of our service man which is a feature no other company can duplicate.



Fill out this Specification Sheet and Mail to the

GRAND RAPIDS VAPOR KILN

ENGINEERS—MANUFACTURERS —CONTRACTORS

Main Office and Factory, Grand Rapids, Mich.

Represented on the Pacific Coast by E. F. Tindolph, 5539 White-Henry Stuart Bldg., Seattle, Wash.

Foreign Offices:

A. R. Williams Machinery Co., St. Johns, N. B.

The Oliver Machinery Co., Manchester, England

Hampe & Hartwig Hamburg, Germany

.....19__.

GRAND RAPIDS VAPOR KILN

Specifications for Leitelt Lumber Lifts

Lumber Lift for .....
Address .....
If in the Machine Room, at what machines? .....
Planer, Ripsaw or Cutoff Saw.
Height of machines above Machine Room floor? .....
If Machine Room and Kiln or Dry Storage levels are not the same give difference in elevation.....ft.....inches.....Machine Room floor.
(Above or below)
If used to raise or lower Kiln cars of lumber between yard or Storage and Kiln level, state how used and distance of travel .....
.....
If used to load Kiln cars either from R.R. cars or back of planer or elsewhere, give full details on margin.
Kind of lumber ..... Quantity .....board feet. Maximum weight .....lbs.
Net height of lumber on trucks .....Length ..... Width of pile .....
End or Cross Pile .....End or side entrance on LIFT platform .....
Number of rails on platform .....Centre distance of same .....
Will the Transfer car enter upon LIFT platform? .....
Kind of Current A.C., D.C. Phase .....Cycles .....Volts .....

DATA SUBMITTED BY

Firm .....
By .....
Address .....

Give us a pencil sketch on the margin showing Elevation and plan, with dimensions

In the mill of the Norwood Sash & Door Co. Norwood, Ohio

A Quiet Drive

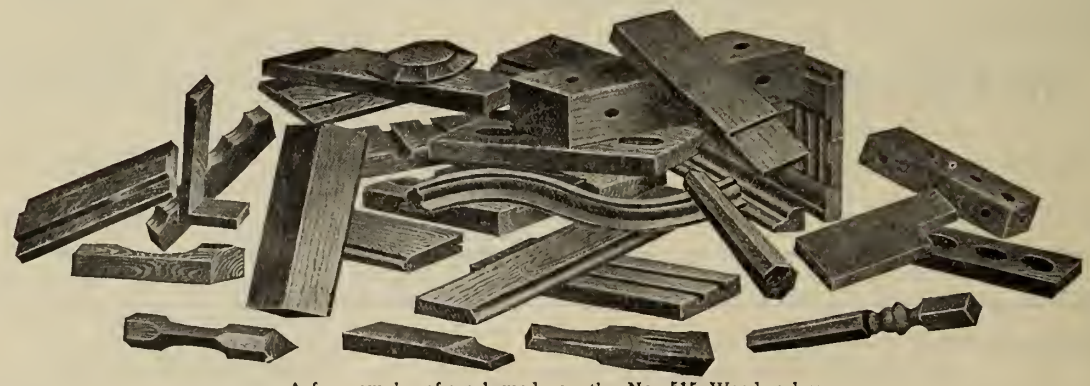
A Satisfied Operator

Motor Built into Machine

All Spindles run in BALL BEARINGS

No. 515 Ball Bearing Shaftless Motorized Universal Woodworker

Send for circular showing just how all of the samples below are made on this one machine



A few samples of work made on the No. 515 Woodworker

J. A. Fay & Egan Company

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

2705-2805 Robertson Ave. (Oakley) Cincinnati, Ohio, U.S.A.

Exclusive Agents for the Dominion: A. R. Williams Machinery Company, Ltd., Toronto, Ont.
Branches: Montreal, St. John, N. B., Winnipeg, Vancouver

Christmas 1923

Our Best Wishes

Gladly do we take this opportunity to wish you, one and all, "A Merry Christmas and a Happy New Year."

PEDWELL Since 1883 Service to Hardwood Users

The PEDWELL HARDWOOD LUMBER CO.

Office and Yard: Foot of Spadina Ave. - - TORONTO

Christmas Greetings

Wishing you the Compliments of the Season and every Success in the New Year. We extend our thanks for the generous amount of business you have given us, and will put forth every effort to give even better service and values in 1924.

PERCY E. HEENEY, Kitchener, Ont.

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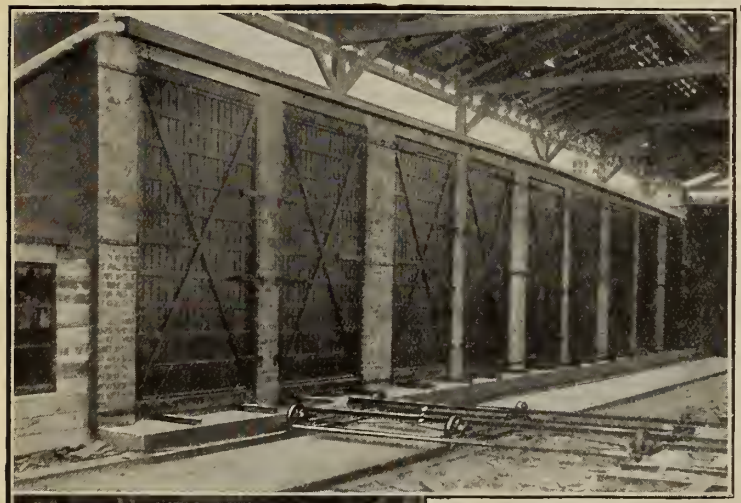


"You can't dry 4/4 oak in 7 days, "said a friend, but it was done in 6 days with

Cutler

Half Time

Kilns

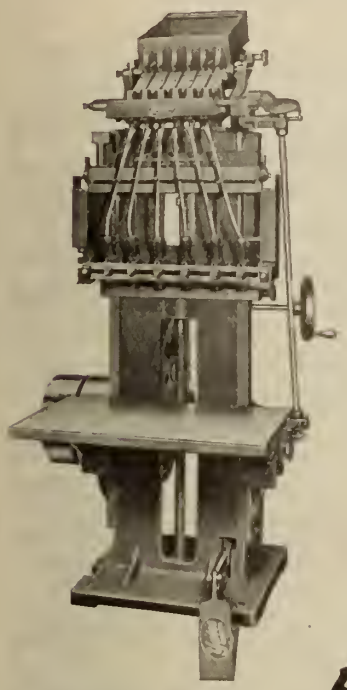
While his friend, who had recently bought a battery of kilns is drying 4/4 oak in 10 or 12 days he is drying in 6 without any degrade.

His friend, who said the best kiln in the world could not do it, now says, "There ain't no such animal."

The photographs reproduced herewith show the equipment which is doing it and we will be pleased to supply the name of the lumber company. Write now.

Cutler Desk Co., Dept. B. Buffalo, N.Y.

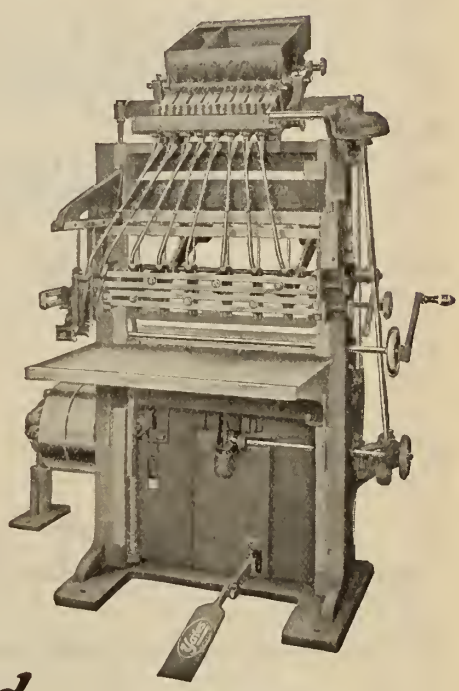
INCREASE YOUR BOX OUTPUT WITH THE LATEST IMPROVED NAILERS



CLOSED BACK TYPE

A Company installed a couple of our Nailing machines and wrote us later on saying. "There is no question, these machines have certainly increased our output and lowered our manufacturing costs."

Yates Nailing machines have been a success at every installation, as they have proven the saving which can be effected by their use. It may be worth your while to inquire about nailing machines for your business.



OPEN BACK TYPE

P. B. Yates Machine Co. Ltd.

HAMILTON - ONTARIO

Greetings

from the makers of Radcliff Saws

It is with great pleasure that we again wish our many friends in the trade the Compliments of the Season and all good wishes for the New Year. We thank you for the business you have favored us with and the kind co-operation you have shown. May 1924 be the best, the biggest and the happiest year you have yet known.

Radcliff Saw Manufacturing Company, Limited

1550 Dundas St. West, TORONTO, ONT.

The First Woodcutter
Trade Mark Registered

Yuletide Greetings

WE extend to all members of the Trade, our sincere wishes for a joyous Christmas, and we trust that we may co-operate to make 1924 a bigger, brighter year than ever before.

LELAND G. BANNING

CINCINNATI — OHIO

Canadian Representative: A. E. KLIPPERT, 11 Laxton Avc., TORONTO, ONT.

SPECIAL SERVICE FOR PARTICULAR BUYERS

"We maintain a stock of Northern lumber, catering to the buyer who wants one particular grade in car lots, or whose needs call for a mixture of different woods in mixed cars.

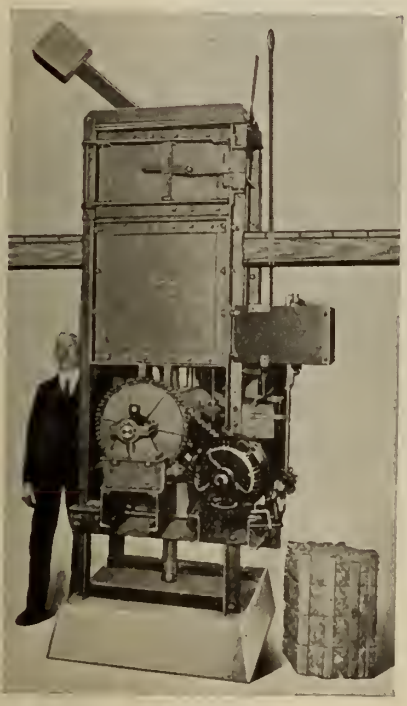
The ability to get what is needed when wanted, without the waste from lower grades, or investment in lumber of higher grade, together with our planing mill facilities, and our battery of 23 dry kilns, make our service especially desirable for factory buyers.

May we quote you on your next purchase."

KNEELAND-BIGELOW COMPANY

BAY CITY - - MICHIGAN

Turn Your Shavings into Profit



Shavings can be made a source of profit when they are economically and efficiently baled, such as when a

CLIMAX

Electric Power Shaving Baler is used.

Capacity approximately 200 bales per day.

We also make hand operated Balers.

Write us for catalog and full particulars.

CLIMAX BALER COMPANY
HAMILTON ONTARIO

Merry Xmas

to **all** in the woodworking field WHETHER OUR CUSTOMERS OR NOT.

because

on the success of each of us is built the progress of all.

The STANDARD Dry Kiln Co.

1542 McCarty St., Indianapolis, Ind.

The Shimer Round Safety Cylinder with High Speed Knives

A Round Safety Cylinder that will Appeal to the Buyer and the User for three Reasons:

The first is our adjusting nut for setting the knives. It is the only cylinder with properly located adjusting nuts for setting the knives, which, with our way, can be set to 1-1000 of an inch.

The second is our way of holding the knife without tapping into the head.

The third is the correct angle of cut for the knives.

Made for any of the different Makers' Machines and in Any Length Cylinder

WRITE FOR PRICES

SHIMER CUTTER HEAD CO., OF CANADA, LIMITED

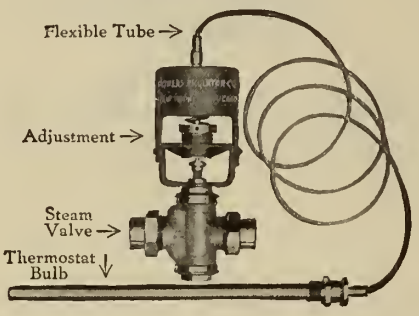
Manufacturers of Cutter Heads, Safety Cylinders and Grinders

GALT, ONTARIO

Why Risk Your Reputation with Poor Glue Work?

Starved joints—glued pieces falling apart—veneer peeling off—burnt and spoiled glue—are eliminated when you control the temperature of you Hot Glue Kettles with a

Powers Regulator



It accurately maintains the glue at a steady UNIFORM temperature. Set this regulator for 150°F., and your glue kettles require no further attention. Simply turn on the steam in the morning and off at night, there's no worry about the kettles getting too hot or cold.

It Costs Only 4 Cents a Day

This regulator is entirely automatic and requires no air or electricity for its operation. It is very dependable and its only expense is for depreciation and interest which is only $0.0398 per day worked.

Isn't it worth 4 cents a day to you to know that when a piece is glued it will not come apart? Keep your glue at the proper temperature and you insure your customers' satisfaction, and efficiency in your shops

Will You Make this FREE Test ?

It costs you nothing to get FIRST HAND evidence of the savings obtained with this regulator. Test it on one of your kettles for 30 days. If you are convinced that it is a mighty good investment for your firm, pay us for it; if not, return it. The coupon will bring full paritculars and prices. Will you send it?

The Canadian POWERS REGULATOR CO Ltd

Specialists in Automatic Heat Control

106 Lombard Street — Toronto, Ont.

Calgary, Alta. Halifax, N. S. Montreal, Que.
Vancouver, B. C. Winnipeg, Man.

The Canadian Powers Regulator Co.,
106 Lombard St., Toronto, Ont.

Let me have, without obligation, full particulars and prices of your regulators for Glue Kettles.

Name .....

Firm .....

Address .....

Built to Serve---

This Smart-Turner Compressor is specially adapted to the many uses to which a compressor is put in the various industries. Self-contained and water cooled it will produce up to 48 cu-ft. per minute for double and 24 cu-ft. per minute single cylinder.

Smart-Turner Machine Co., Ltd.

Hamilton Ontario

Representatives in Toronto, Montreal, Winnipeg and St. John

is where the raw material enters---

You can reduce WASTE, TIME and LABOR
You can SPEED UP PRODUCTION

IN THE MACHINE ROOM
at the double surfacers.
Rip Saws. Cut-off Saws.
Matchers. Edgers.

IN THE YARDS
Stacking Kiln Trucks.
Unloading Box Cars.
Loading Box Cars.

with

LEITELT LUMBER LIFTS

Just write us now and say, "Show Us" without obligation, and we will.

Mfrs. LEITELT IRON WORKS, GRAND RAPIDS, MICH.

SELLING AGENTS:

B. F. STURTEVANT CO.,
Hyde Park, Boston
STANDARD DRY KILN CO.,
Indianapolis, Ind.
NORTH COAST DRY KILN CO.,
Seattle, Wash.

EMERSON DRY KILN CO. INC.,
30 Church Street, New York City
MOORE DRY KILN CO.,
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MOORE DRY KILN CO.,
North Portland, Ore.
J. D. WALLACE & CO.,
1401 W. Jackson Blvd. Chicago, Ill.
GRAND RAPIDS VAPOR KILN,
Grand Rapids, Mich.

Greetings

TO THE GLUE USING TRADE

Another year is about to pass and, looking back at what we have accomplished, it behooves us to express our appreciation to those whose courtesies and patronage aided us in our progress.

We are thankful to you for the many favors rendered us, and extend to you the Season's Compliments, with sincere wishes for a joyous and prosperous New Year.

PERKINS GLUE COMPANY

Factory and General Offices:
Lansdale, Pennsylvania

Sales Office:
South Bend, Indiana

OAKEY'S

Glass Paper, Flint Sand Paper, Garnet Paper

IN SHEETS AND ROLLS FOR ALL PURPOSES

Rolls 50 yards long, 18 in., 20 in., 24 in., 30 in., 36 in., 40 in., 42 in. and 48 in., wide

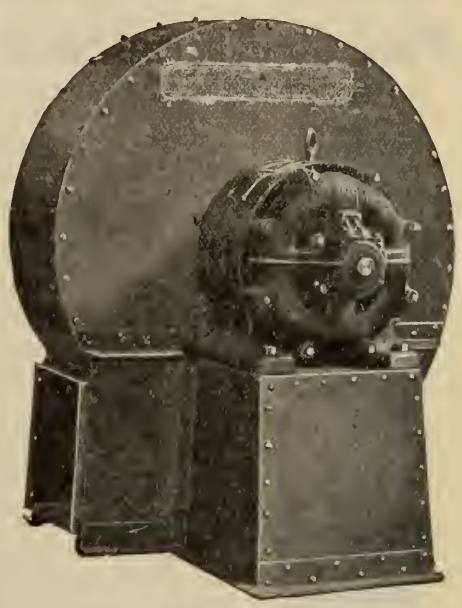
SHEETS, DISCS, STRIPS AND BANDS can be made to Special Sizes to suit the requirements of Purchasers

JOHN OAKEY & SONS LTD., WELLINGTON EMERY AND BLACK LEAD MILLS LONDON, S. E. 1.

Canadian Agents:

John R. Anderson, 36-38 St. Dizier St., Montreal, P.Q. Sankey & White 839 Beatty Street, Vancouver, B.C.

Prominent Blow Pipe Company Specifies "Canadian" Slow Speed Mill Exhausters



because the lower speed saves a large part of operating cost and gives greatly increased durability.

Our Catalogs will be sent for the asking.
Better write today to Dept. 13.

Canadian Blower & Forge Company Ltd.

Kitchener — Ontario

Toronto - Montreal - Calgary - Winnipeg - St. John - Vancouver

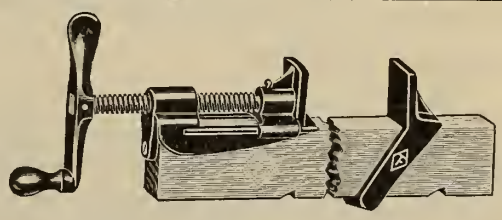
THE STRONGEST, QUICKEST AND MOST EFFECTIVE

COLUMN CLAMP

ON THE MARKET

One of the Many Good Clamps Made By

The BLACK BROS. CO. Mendota, Ill., U.S.A.



No. 1 Clamp Fixture

Improved Design

Furnished without Bars. Made to attach to wood bars 1¼ in. thick by 2½ in. wide, any length. Screws are 7 x ⅝ in. deep, square threads, cut from cold rolled steel.

TAYLOR-FORBES COMPANY, Limited

Guelph, Ontario

PEMBROKE PLYWOOD COMPANY, Pembroke, Ont.

Manufacturers of Rotary Cut Veneers, Only the Finest Selected Logs Used, Birch Sheet Stock Our Specialty.

Prompt Service and Quality Guaranteed - - Your Correspondence Invited

Hardwood Dowels

Plain, Straight and Spiral Grooved

"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

ORILLIA ONTARIO

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

Choice Southern Hardwoods

Plain White Oak

1 car 4/4 Fas 6" & wdr. avr. 10"
1 car 4/4 Sels. 75% 10" & up

Plain Red and White Oak

1 car 4/4 Fas

Sound Wormy Oak

1 car 4/4 Com. & Btr. 6" & wdr

Sap Gum

3 cars 4/4 No. 1 Com.
3 cars 5/4 Fas
3 cars 5/4 No. 1 Com.
1 car 5/4 No. 2 Com.
1 car 6/4 No. 1 Com. & Btr.
1 car 8/4 No. 2 Com.

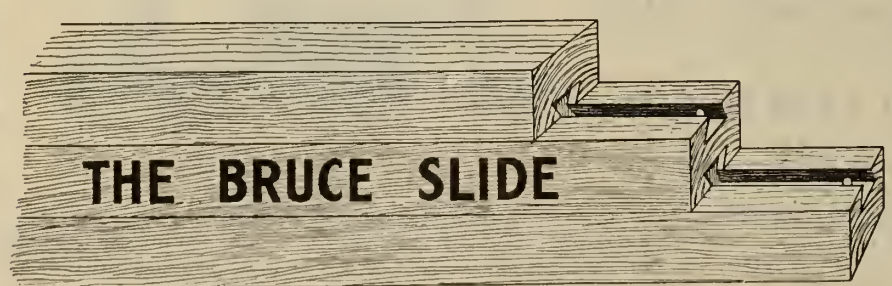
Your inquiries for any of the above or other items in Southern lumber will receive our best attention.

Dacus Lumber Co.

746-7 Bank of Commerce & Trust Co., Bldg.
Memphis, Tenn.

Mills: Tunica, Miss. Clayton, Miss.

TABLE SLIDES TABLE RIMS TABLE PINS



Makers of—

The "Bruce Slide"

BRUCE WOODWORKERS, Limited, Chesley, Ont.

To our Friends, Acquaintances, Competitors and to the Readers of this Journal, We Extend—

Christmas Greetings

Here is a Partial List of MOISTAT Systems in Operation

The list given below is complete only to November 1st. During the time elapsed from that date to date on which this journal is published many other orders for Moistat Systems will have been completed and the Moistats placed in operation. Fourty-four prominent manufacturers are represented in this list. Products range from wheel spokes to caskets and from hardwood flooring to the finest furniture. Wherever high quality in drying is desired, manufacturers have found the economical and practical solution to their problems in the Moistat System. Any of these users will welcome inquiries. Drop a line to a few of them today.

IN OPERATION NOV. 1st

Albert Furniture Co., Shelbyville, Ind.
The Baker R. & L. Co., Cleveland, Ohio.
Biltmore Lbr. & Mfg. Co., Biltmore, N.C.
Bliss Plywood Corp., York, Pa.
Brewer Mfg. Co., Brewer, Maine
The Brunswick-Balke-Collender Co. Musegon, M.
N D. Cass Co. of Vermont, Manchester Depot, Vt.
The A. Claus Mfg., Cleveland, Ohio
The Cleveland Burial Case Co.,. Cleveland
Columbus Show Case Co., Columbus, Ohio
W. J. Cowee, Berlin, New York
Delong Furniture Co., Topton, Pa.
P. Derby & Co., Gardner, Mass.
Dixie Chair Co., Elizabethton, Tenn.
French & Heald Co., Milford N.H.
Gayoso Lumber Co., Memphis, Tenn.
The Gorham Bros., Co., Mt. Pleasant, Mich.
Hayes-Ionia Co., Grand Rapids, Mich.
Holly Ridge Lbr. Co., Monroe, La.
Hoosier Desk Co., Jasper, Ind.
The Hoosier Mfg. Co., New Castle, Ind
Knox-Hutchins Furniture Co., Paoli, Ind.
Lang Body Co., Cleveland, Ohio.
Lovell Manufacturing Co., Erie, Pa.
Hugh Lyons & Co., Lansing, Mich.
Maxwell Motor Corporation, Dayton, Ohio.
North Vernon Lbr. Mills, Louisville, Ky.
The Ohio Body & Blower Co., Cleveland, Ohio
Owosso Casket Co., Owosso, Mich.
Robbins Body Corp., Indianapolis, Ind.
Satin Finish Hardwood Flooring Ltd., Weston,
E. H. Sheldon & Co., Muskegon, Mich.
Sherrill Hardwood Lbr. Co., Merryville, La.
Steinway & Sons, Steinway, L.I., N.Y.
Tindall-Gerling Furn. Co., Shelbyville, Ind.
Union City Body Co., Union City, Ind.
Ward Brothers, Big Rapids, Mich.
Ward Furniture Mfg. Co., Ft. Smith, Ark.
Wasmuth-Endicott Co., Andrews, Ind.
Westwood Mfg. Co., Weston, W. Va.
Willys-Overland Co., Toledo, Ohio.
Wisconsin Cabinet and Panel Co., New London, Wis.
York Lbr. and Mfg. Co., Memphis, Tenn.
Twin City Hardwood Lbr. Co., Minnesota Transfer, Minn.

REPEAT ORDERS FROM

Biltmore Lbr. and Mfg. Co., Biltmore, N.C.
The Brunswick-Balke-Collender Co., Muskegon, Michigan
Columbus Show Case Co., Columbus, Ohio.
French & Heald Co., Milford, N.H.
The Gorham Bros. Co., Mt. Pleasant, Mich.
George W. Hartzell, Piqua, Ohio.
Maxwell Motor Corp., Dayton, Ohio.
The Hoosier Mfg. Co., New Castle, Ind.
The Lang Body Co., Cleveland, Ohio
Hugh Lyons & Co., Lansing, Mich.
E. H. Sheldon & Co., Muskegon, Mich.
Union City Body Co., Union City, Ind.
Westwood Mfg. Co., Weston, W. Va.
Willys-Overland Co., Toledo, Ohio

THIRD ORDER FROM

The Brunswick-Balke-Collender Company, for the Dubuque, Iowa, Plant.

Write today for complete Moistat literature, drying data and other important information.

The National Dry Kiln Company

1117 East Maryland Street **Indianapolis, Indiana**

Branches: Albany, N. Y.– Memphis, Tenn.

J. R. EATON & SONS, LIMITED

MANUFACTURERS OF HIGH GRADE WOOD PRODUCTS

Wood Turnings, Hardwood Dowels, Turned Table Legs, Kitchen Tables, Kitchen Cabinets, Oak Extension Tables, Oak Library Tables, "Empire Brand" Hardwood Flooring in Maple, Birch, and Plain or Quarter Cut Oak, Solid Pine and Veneered Hardwood Doors.

A Large Factory equipped with up-to-date machinery is at your service to furnish "WHAT YOU WANT"— WHEN YOU WANT IT."

YOUR ENQUIRIES SOLICITED

Orillia Ontario Canada

Steele & Hibbard Lumber Co.

ST. LOUIS, MO.

56 Years in Business

We carry a large stock of dry

Hardwood Lumber

25 Different Kinds
Quick Shipment
Write or wire for Prices

We specialize Oak cut from Mild Texture Missouri Timber with thin sap both plain and quarter sawed.

We ship also from Sawmills direct ; Red as well as Sap Gum and Poplar both plain and quarter sawed, Sound Wormy Chestnut, Cypress and Ash.

"Wire collect for prices or other information. Time is Money, delays pay no dividend."

DONT TAKE THE CHANCE!

BRANDED

THIS SHIELD PROTECTS YOU

From Dissatisfaction and Inferior Quality in

RED GUM, OAK, WHITE ASH and ELM

STANDARDIZED GRADES

E. B. NORMAN & CO.

LOUISVILLE, KY.

BAND MILLS: ST. LANDRY, LA.
MEEKER, LA.

A Guarantee of Quality

WATERTOWN TABLE-SLIDES

Watertown Slides are used on the best made tables. Their smooth, easy action on your tables are evidence of thorough workmanship and quality construction. Write today for particulars regarding the "Watertown Slide" and the "Watertown Automatic Roller Bearing Equalizer Table Slides."

WATERTOWN TABLE-SLIDE COMPANY

Watertown, Wisconsin, U.S.A.

OTIS
TRADE MARK

Tabasco
Honduras

ESTABLISHED 1867
INCORPORATED 1886

Laguna
Mexican

MAHOGANY

Rarely are such stores of precious wood to be found as may be seen in our yards. Across the seas from tropic lands it comes. From thick jungles where the light of day but dimly penetrates and where tangled native paths make difficult the bringing out of timber. Here the black man labors, risking life from jungle dangers, that supplies will not diminish and your orders may be filled.

Twelve million feet per year is the capacity of OTIS mills. An adequate supply is always on hand for prompt shipment. Get our prices.

Otis Manufacturing Company

Peters Avenue and The River

NEW ORLEANS, LA.

Chicago Office: Room 208, 128 N. Wells Street

We Want To Sell

2	cars	4/4"	No. 1 Common Chestnut
2	cars	4/4"	FAS Chestnut
10	cars	4/4"	No. 1 Common Poplar
5	cars	6/4"	Saps & Selects Poplar
5	cars	8/4"	No. 1 Common Poplar
5	cars	8/4"	Saps & Selects Poplar

As well as all grades and thicknesses of TOUGH TEXTURED WHITE ASH, SOFT TEXTURED OAK and WALNUT.

Louisville Point Lumber Co., Inc.

1144 Fulton St. - Louisville, Ky.

Canadian Representative:
Walter S. McBean,
200 St. Clarens Ave.,
Toronto, Ontario, Canada

HARDWOODS

Native and foreign hardwoods, specially selected for the woodworking and furniture trades. Also Crating Spruce, Pine and Hemlock, Canadian Birch, Basswood and Maple.

The McDonagh Lumber Co.
Confederation Life Bldg. Toronto

OAK

Plain and Quartered, Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

Oak Timbers and Planking

THE MOWBRAY & ROBINSON LUMBER CO.

Office: CINCINNATI, OHIO

Canadian Representative:
A. K. Johnson, Bank of Hamilton Bldg., Toronto, Ont.

Chas. F. Luehrmann Hardwood Lumber Co.

Manufacturers and Wholesalers of

Hardwood and Yellow Pine Lumber

Office and Yard: 148 Carroll St. St. Louis, Mo.

Hardwood and Yellow Pine for Immediate Shipment from Stock

Complete Stock of Ply Wood Panels
3 and 5 Ply—Carried in Stock at St. Louis

FIR DRAWER BOTTOMS
FIR DOOR PANELS

Write us for our Stock and Price List

Grind 'em in 1/5 the Time

The GeBott Band Wheel Grinder enables any band saw filer or mill mechanic to grind band saw wheels in one-fifth the time required by other methods. An average set of wheels can be completely ground in six hours. Write for particulars about this time and money saver.

GeBott Mnfg. Co. Muskegon, Michigan

Do You Know

whether British Columbia can supply your lumber?
If you will write us fully, we will tell you whether our lumber is suited to your purposes.

When You Know

that British Columbia can supply your lumber, we will be pleased to quote you delivered prices.

Hanbury Timber Products, Ltd.

850 Hastings Street West - - Vancouver, B.C.

Toronto Hardwood Lumber Company, Ltd.

Wholesalers and Retailers of Canadian, American and Tropical Hardwoods of every description; 3-ply and 5-ply Panels in stock sizes

Carried in our Toronto Yard available for immediate shipment to out-of-town customers, ample stocks of the following:

MAHOGANY	4/4 to 8/4	BLACK ASH	4/4
WALNUT	3/8 to 24/4	BIRCH	4/4 to 16/4
CHESTNUT	4/4 to 8/4	BEECH	4/4
PLAIN RED OAK	1/2 to 16/4	HARD MAPLE	5/4 to 6/4
PLAIN WHITE OAK	1/2 to 16/4	SOFT MAPLE	4/4
QTRD. WHITE OAK	4/4 to 8/4	BASSWOOD	4/4 to 8/4
YELLOW POPLAR	5/8 to 16/4	WILLOW	4/4
QTRD. RED GUM	4/4 to 8/4	CHERRY	4/4 to 6/4
QTRD. SAP GUM	4/4 to 8/4	BUTTERNUT	4/4 to 10/4
PLAIN RED GUM	4/4	S. L. YELLOW PINE	4/4 to 6/4
PLAIN SAP GUM	4/4 to 6/4	CALIFORNIA REDWOOD	4/4 to 6/4
WHITE ASH	4/4 to 20/4	SPANISH CEDAR	3/8 to 6/4

Stock panels ¼" 3-ply and ⅜" 5-ply in Walnut, Mahogany, Qtrd. White Oak, Plain Red Oak, Birch, Figured Red Gum, Good 1 Side, and Good 2 Sides, in sizes 20" x 60", 24" x 60", 30" x 60", 24" x 72", 30" x 72", 36" x 72".

Office, Yard and Warehouse, 29-49 Atlantic Ave., G.T.R., TORONTO. Phone Lake 1953
Band Sawmill and Drykiln, Louisville, Ky.

A Permanent Lumber Service

AFTER several years of inactivity we are now cutting on our modern fully equipped mills at Manistique and Little Lake, Upper Michigan. The timber behind these mills was purchased many years ago by the Stack interests from the then "unlimited" supply. Its quality, particularly the maple and birch, is the envy of northern mill men among whom this tract is famous.

This timber will run the mills to full capacity for fifteen to twenty years. The 40,000,000 feet annual cut will run:

15,000,000 ft. maple annually
6,000,000 ft. birch annually
2,500,000 ft. beech annually
2,500,000 ft. elm annually
900,000 ft. basswood annually
200,000 ft. ash annually
3,000,000 ft. white pine annually

the balace in Spruce and Tamarack.

Our exceptional service, grades, and manufacture will be maintained. "Low freight rate shipments by water to Toronto, Montreal, Owen Sound, Port Arthur, and other Great Lakes and St. Lawrence River Ports. Conveniently located also for rail shipments to inland points by the C.P.R. or Soo line."

We will be pleased to hear from old friends and from new ones who can understand and appreciate what permanent connection with such a source of supply would mean.

STACK LUMBER CO.

ESCANABA MICHIGAN

Southern Hardwoods

MISSISSIPPI DELTA GUM
The Best That Grows

OUR mills are producing some beautiful stock at the present time, and we can assure prompt delivery in any quantity.

Plain and Quartered Red and Sap Gum, Plain and Quartered White Oak, Plain Red Oak, Cottonwood, Cypress, Ash, Elm.

MISSISSIPPI VALLEY HARDWOOD CO., INC.

Bandmills: Memphis, Tenn., Clarksdale, Miss.
Sales Office: Memphis, Tenn.
MISSISSIPPI DELTA GUM The Best That Grows

"Send that order to the South Texas Company"

"They always carry the best."

OAK ASH GUM ELM MAGNOLIA SYCAMORE COTTONWOOD

We maintain a superior service in Southern Hardwoods that never fails to please. Quality and prices right.

Get our quotations on the next lot you need

SOUTH TEXAS LUMBER COMPANY

MANUFACTURERS OF HARDWOODS AND SOUTHERN PINE

General Sales Office: Houston, Texas Band Mills: Onalaska, Milvid, Connell, Dayton, Cleveland, and Fuqua

Stimson Veneer and Lumber Co.

(Inc.)

Office and Mill: McLean Ave. and Union Belt R.R.

Memphis - Tenn.

We sell only the product of our own mills and make band sawn lumber in all Southern Hardwoods.

We specialize in Quartered White Oak, Red Oak, and Red Gum.

With allied companies we make fifty million feet annually.

J. V. Stimson Hardwood Co.

Manufacturers and Exporters

Band Mills: Memphis, Tenn., Helena, Ark., Floyd, La.

Memphis - Tenn.

STOCK LIST

QUARTERED WHITE OAK:

3	cars	4/4"	Fas
1	"	5/4"	Fas
5	"	4/4"	No. 1 Common
1	"	4/4"	No. 2 Common

PLAIN WHITE OAK:

5	cars	4/4"	Fas
2	"	5/4"	No. 1 Com. & Btr.
10	"	4/4"	No. 1 Com. & Sel.
7	"	4/4"	No. 2 Common

PLAIN RED OAK:

6	cars	4/4"	Fas
3	"	5/4"	Fas
3	"	6/4"	Fas
1	"	8/4"	Fas
8	"	4/4"	No. 1 Common
10	"	5/4"	No. 1 Common
2	"	6/4"	No. 1 Common

QUARTERED RED GUM:

5	cars	4/4"	Fas
4	"	4/4"	Fas. Fig.
6	"	5/4"	Fas
7	"	6/4"	Fas
10	"	4/4"	No. 1 Common
10	"	5 4"	No. 1 Common
10	"	6/4"	No. 1 Common
10	"	8/4"	No. 1 Common

QUARTERED RED GUM S.N.D.:

5	cars	5/4"	No. 1 Com. & Btr.
5	"	6/4"	No. 1 Com. & Btr.
10	"	8/4"	No. 1 Com. & Btr.

ASH:

4	cars	10/4"	No. 1 Com. & Btr.
2	"	12/4"	No. 1 Com. & Btr.
2	"	4/4"	No. 1 Common
2	"	4/4"	No. 2 Common

SAP GUM:

8	cars	4/4"	Fas
3	"	5/4"	Fas
3	"	6/4"	Fas
15	"	4/4"	No. 1 Common
8	"	4/4"	No. 2 Common
5	"	5/4"	No. 1 Common
5	"	6/4"	No. 1 Common

COTTONWOOD:

2	cars	4/4"	Fas
2	"	4/4"	x 9 — 12" Box Bds.
2	"	4/4"	x 13 — 17" Box Bds.
6	"	4/4"	No. 1 Common
2	"	4/4"	No. 2 Common

ELM:

2	cars	4/4"	Log Run
6	"	10/4"	Log Run
6	"	12/4"	Log Run

Making Up a Trainload at Our Madison Parish, La., Operations

Southern Hardwoods
and
Genuine Louisiana Red Cypress

OAK, ASH, GUM, COTTONWOOD, ETC.

GLIMPSE NUMBER TWELVE INTO THE HARDWOOD OPERATIONS OF

E. SONDHEIMER CO.

(Cable Address—Sonderco-Memphis)

MANUFACTURERS

Band Mills:
SONDHEIMER, TALLULAH
ALEXANDRIA, LA.

Office and Distributing Yard:
MEMPHIS, TENN.
Chelsea and McLean Avenues

KIRBY-LUMBER COMPANY

HOUSTON - TEXAS

Manufacturers ***Exporters***

SOUTHERN HARDWOODS

Over One Billion Feet of Hardwood Timber

— *Our Specialties* —

Soft Textured Neches Valley Red Gum
Steam Cured Bright Sap Gum

"KIRBY FOR QUALITY IN QUANTITY"

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

CHERRY

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	43,000	10,500	196,000	175,000
1¼ in.	44,000	1,100	20,000	16,000
1½ in.	36,200	100	33,000	102,000
2 in.	3,000	.....	9,000	68,000
2½ in.	4,500	.....	4,300	3,000
3 in.	23,700	.....	4,500	4,000
4 in.	8,300	.....	900	.....

CHESTNUT

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	1,600	.....	4,000	.....
1 in.	85,000	.....	161,000	163,000
1¼ in.	13,000	1,450	78,000	53,000
1½ in.	14,700	1,600	92,000	400
2 in.	19,000	.....	52,000	32,000
2½ in.	2,000	.....	.....	.....
3 in.	1,300	.....	.....	.....
4 in.	1,500	.....	300	.....

PLAIN RED OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
¾ in.	50,000	224,000	1,500	.....
⅝ in.	.....	53,000	21,000	2,400
1 in.	71,000	64,000	19,500	75,000
1¼ in.	52,000	112,000	2,000	2,100
1½ in.	36,000	74,200	5,000	2,500
2 in.	67,000	138,000	26,000	10,000
2¼ in.	1,500	1,400	.....	.....
2½ in.	96,100	34,000	.....	.....
3 in.	57,800	37,000	5,000	12,000
4 in.	30,600	14,600	3,000	200

TENNESSEE SCENTED CEDAR

1 in.—38,000
1¼ in.— 1,500

PLAIN WHITE OAK

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
⅝ in.	14,000	7,000	15,900	3,000
¾ in.	51,000	160,000	.....	23,000
1 in.	88,000	102,000	44,200	112,000
1¼ in.	51,000	14,600	.....	.....
1½ in.	16,000	14,000	.....	.....
2 in.	21,000	43,000	4,000	.....
2¼ in.	3,200	3,200	.....	.....
2½ in.	104,000	42,000	2,000	.....
3 in.	42,000	26,000	300	....
3½ in.	4,500	3,000	.....	.....
4 in.	47,000	17,800	600	.....

QUARTERED RED OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
¾ in.	.....	.....	4,700	.....
1 in.	2,200	6,400	15,000	1,400
1¼ in.	9,900	.....	10,900	.....
1½ in.	400	.....	4,000	.....
2 in.	.....	.....	7,400	.....

PLAIN RED GUM

	1 & 2	No. 1 Com.	No. 2 Com.	No. 3 Com.
1 in.	77,000	128,000	16,200	5,870
1¼ in.	37,000	67,000	2,700	800
1½ in.	15,000	50,000	15,000	.....
3 in.	5,000	22,000	15,000	10,000
10/4	.....	2,500	600	600

QUARTERED WHITE OAK

	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
½ in.	6,100	.....	.....	.....
¾ in.	3,900	.....	2,300	3,000
⅝ in.	.....	.....	400	800
1 in.	80,000	800	15,000	3,700
1¼ in.	10,000	30,300	75,000	5,800
1½ in.	19,000	500	23,500	.....
2 in.	.....	.....	22,000	5,700
2½ in.	2,000	.....	300	.....
3 in.	4,000	.....	1,200	.....
4 in.	5.600	.....	500	.....

POPLAR

	1 & 2 18" up	1 & 2	No. 1 Com.	Bright Saps
¾ in.	.....	4,000	2,700	300
⅝ in.	1,000	39,000	12,100	43,900
1 in.	1,000	101,000	92,000	159,700
1¼ in.	1,800	4,000	112,000	18,000
1½ in.	4,300	3,000	.....	29,000
2 in.	.....	13,300	4,000	78,800
2½ in.	.....	5,000	.....	11,800
3 in.	.....	2,600	8,000	19,000
4 in.	.....	3,000	6,500	9,200

QUARTERED SAP GUM

	1 & 2	No. 1C	No. 2C
4/4	.....	1,800	.....
5/4	.....	9,000	.....
8/4	.....	18,000	800	.....
10/4	.....	7,000	14,300	.....
12/4	.....	300	.....	300

Also Large Stocks of Ash, Basswood, Beech, Birch, Hard and Soft Maple.

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y. Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

MILLER, STURM & MILLER
Hardwoods of All Kinds
1142 Seneca Street

Taylor & Crate **Hardwoods of All Kinds**
A stock of 18,000,000 to 20,000,000 ft. of Hardwoods carried at all times at our big Buffalo yards.
RAIL AND CARGO SHIPMENTS
Established 56 Years
2101 Elmwood Avenue

Buffalo Hardwood Lumber Co.
J. B. Wall, Pres't
M. M. Wall, Treas.
T. H. Wall, V-Pres't.
940 Seneca Street
We specialize in—WHITE ASH, OAK AND MAPLE

ATLANTIC LUMBER COMPANY
HARDWOODS
Our Specialty—West Virginia and Pennsylvania Cherry
West Virginia Soft Red and White Oak. 1055 Seneca Street

1" to 4 No. 1" Common and 1s & 2s **HARD MAPLE**
Excellent widths and lengths.
Can kiln dry and surface.
G. Elias & Bro., Inc. Elk Street to the Buffalo River **Buffalo, N. Y.**

T. SULLIVAN & COMPANY
NORTHERN
Gray Elm and Maple
Niagara Street Corner Arthur

BUFFALO *"Buy and Sell Hardwood in this Market."*
FAMOUS LUMBER CENTER
Unequalled facilities for rapid dispatch, by Rail, Lake or Barge Canal, on all your requirements, large or small.
SUPPLYING THE HARDWOOD NEEDS OF THE NATION

STANDARD HARDWOOD LUMBER CO.
Hardwoods
Prompt Shipments—from Buffalo Yards or from Mill direct to you
8,000,000 feet Dry Stock on Hand. 1333 Clinton Street

HUGH McLEAN LUMBER CO.
HARDWOODS OF ALL KINDS
Our Specialties—Quartered White Oak, Plain and Quartered Gum
940 Elk Street

BLAKESLEE, PERRIN & DARLING
A complete stock of seasoned Hardwoods
Including Ash, Basswood, Birch, Cherry, Chestnut, Cypress, Elm, Gum, Hickory, Maple, Plain and Quartered Oak, Poplar and Walnut.
1100 Seneca Street

YEAGER LUMBER CO., INC.
Our Specialities
Oak Poplar Ash Maple
932 Elk Street

FRANK T. SULLIVAN
Specialties
Cherry, Walnut and Pacific Coast Woods
Main Office: 600 Ellicott Square. Yard: 2598 Delaware Ave.

WHITE PINE
HARDWOODS

The Oliver Lumber Co.
of Toronto Ltd.
Foot of Spadina Ave., Toronto

They all like the Quality of
THURN-MAXSON
HARDWOODS

Good color, even grain and every load alike—that spells economy in cutting and matching. Let us quote on your needs in OAK, CYPRESS, GUM, etc. Any grade, any quantity.

Thurn-Maxson Lumber Co.
SOUTH BEND, INDIANA

Efficiency Marks Every Step of Our Service to You

Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed Red Gum

Our Specialty Quarter Sawed Red Gum in Plain and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS. **GREENFIELD, OHIO**

A Pleasant Service
is
to demonstrate to our patrons the value of our
MIDLAND WHITE PINE
Practically all Grades Rough or Dressed
CANADIAN FOREST PRODUCTS

TERRY-NICHOLSON-CATES
LIMITED
SUCCESSORS TO
Terry & Gordon, LIMITED

Montreal **TORONTO** **Vancouver**
Ontario Representatives for
The British Columbia Mills, Timber and Trading Co. Ltd., Vancouver, B C.

STARK
The LAST WORD *in* K QUALITY & SERVICE
BRAND

HARDWOODS
Oak, Ash, Gum, Poplar, Maple, Elm, Cottonwood, Sycamore.

CYPRESS
Lath, Lumber, Dimension.

VENEERS
Door Panel, Piano Rim, Cypress Battery Stock.

OAK FLOORING
"Chickasaw Brand"

An Added Facility and A New Year Idea

Our new planing mill is now in operation. It is equipped with 2- and 4-side surfacers and enables us to supply our customers with hardwood forest products surfaced to any dimension desired and with ceiling, bevel siding, moulding and general mill work. This added equipment is another evidence of our determination to give our clients everything they need in

Hardwood Lumber Cypress-Veneers

Although our facilities are larger than ever before, we are still placing quality above quantity. That is why we take real pride in stenciling our name on everything we produce and why Stark-Brand affords worth-while protection to buyers everywhere. Start the new year right by sending us your next order. We confidently believe you will keep on doing so.

James E. Stark & Company, Inc.
Memphis Veneer & Lumber Co.
MANUFACTURERS
General Offices MEMPHIS, TENNESSEE
Chicago Offices 25 N. DEARBORN ST.

THIS MARK

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for more than half a century the
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OVER FIFTY MILLION FEET ANNUALLY

WILLIAMSON VENEER

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THE WILLIAMSON VENEER COMPANY

CHICAGO JAMESTOWN BALTIMORE HIGH POINT NEW YORK

Reproduction of 17th Century fine oak furniture and interior trim. (Photo by courtesy The Kensington Manufacturing Company, New York.)

Just What You May Expect

Mild texture. A characteristic of Ritter Appalachian Oak which assures economy in kiln drying, working and finishing and affords added beauty as well.

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America's Largest Hardwood Producer—Annual Capacity—130,000,000 Feet

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BUTTS Plain and Ball Tip
DRAWER PULLS
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ETC. ETC. ETC.

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Larsen & Shaw Ltd.
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The Critical Buyer
insists upon
DUNN'S
GLUE
BECAUSE
he is assured of UNIFORMITY at all times.

Sold for nearly half a century and still
"GOING STRONG"

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THOMAS W. DUNN CO.
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From Old Kentucky
The South's Finest Hardwoods

The furniture manufacturer and woodworker who recognizes the sales-getting value of better-than-ordinary lumber will do well to send us his enquiries. The following list of hardwoods in which our Bandmills specialize are representative of the South's finest offerings, superbly manufactured.

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WISHES
ONE and ALL
A MERRY CHRISTMAS
AND A
PROSPEROUS NEW YEAR

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SPECIALTY: Monogram Brand Oak Flooring

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CANADIAN ENQUIRIES SOLICITED

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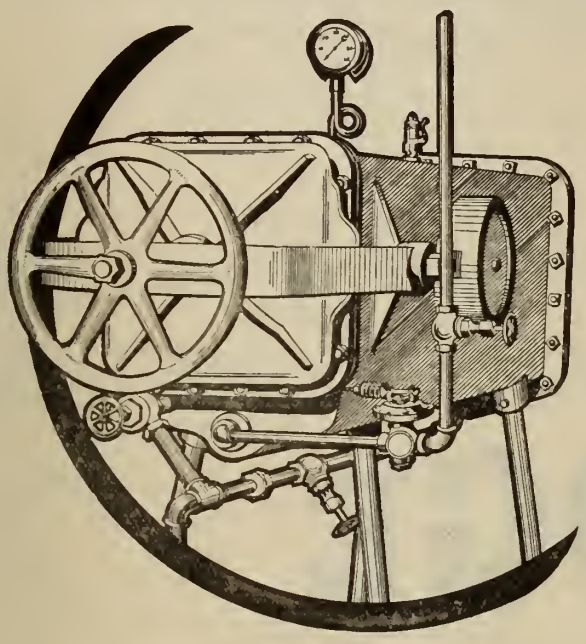
Wood Steaming Retort



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This is one of our

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which we guarantee will save you

50% Less Breakage

in your bending department than your present process; that your stock will dry in your forms or presses in one-third less time; that you will have no stained stock; that your stock will retain its shape much better after being bent; that it will dry in your dry kiln in one half less time and that your steam consumption will be reduced at least 90 per cent.

The door can be opened and closed in ten seconds, and it is steam and water tight and for this reason can be placed anywhere in your factory.

Compare this IMPROVED RETORT with your present steam boxes, then write us for our Booklet on Progressive Wood Steaming.

Made in Preston, Ontario

Perfection Wood Steaming Retort Co.

PARKERSBURG — WEST VIRGINIA

Acknowledged

"quality to be equal to IOWA WALNUT"

Two or three times lately we have seen this phrase on specifications and contracts. It is becoming increasingly frequent.

More and more walnut users are coming to recognize Iowa Walnut as the standard of quality by which others are to be measured.

Buyers write it into their specifications. Sellers guarantee their product to be "just as good."

But why speculate on the "just as good" kind when the same money will buy the known standard of quality—IOWA WALNUT—grown on Iowa cornland, and drawing a greater richness of coloring and marking from that famous deep rich soil.

Write or wire us your needs.

Des Moines Sawmill Co.

1024 Murphy St., Des Moines, Iowa

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N. F. Owings, 232 Lyon St. N.W., Grand Rapids, M.
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The Keystone of Dodge Service in Power Transmission Machinery

We have the capital, the experience, the equipment and the distributive power to justify our manufacturing for stock a quantity of every Power Transmission Unit. We can do this because Dodge lines are standard equipment in a majority of Canadian plants. Buyers can rely upon securing from us, at a moment's notice, any quantity and any size of the following standard lines:

Pulleys (Wood—Iron—Steel)	Countershaft Fixtures	
Shafting	Hangers	Friction Clutches
Couplings	Bearings	Belt Conveyors
Brackets	Bushings	Chain
Pillow Blocks	Sprocket	Gearing
Belting (Leather and Rubber)		Rope (all kinds)

Send us your rush orders and watch how well we shall serve you.
SPECIAL NOTE TO DEALERS: If you would like to secure an appointment as local stocker of Dodge lines, write to us for full particulars.

DODGE

MANUFACTURING CO. OF CANADA, LIMITED

Head Office and Works—Toronto
Branch Warehouse, 770 St. Paul St. West, Montreal

Distributors: Chapman Double Ball Bearings Ex Our Stock

BELLGRADE

Bellgrade Lumber Company
Stock List
Dec. 1st, 1923

QUARTERED WHITE OAK			
12,000′	4/4″	FAS	
29,000′	4/4″	No. 1 Com	
36,000′	5/4″	No. 2 Com	
PLAIN WHITE OAK			
69,000′	4/4″	FAS	
PLAIN RED OAK			
7,000′	1/2″	No. 1 Com & Btr.	
9,000′	5/8″	No. 1 Com & Btr	
75,000′	3/4″	No. 1 Com	
98,000′	4/4″	No. 1 Com	
80,000′	4/4″	Sound Wormy	
QUARTERED RED GUM			
26,000′	3/4″	Com & Btr	
43,000′	4/4″	FAS	
104,000′	4/4″	No. 1 Com	
4,000′	5/4″	FAS	
78,000′	5/4″	No. 1 Com	
46,000′	6/4″	FAS	
57,000′	8/4″	FAS	
PLAIN RED GUM			
9,000′	4/4″	FAS	
93,000′	4/4″	No. 1 Com	
62,000′	4/4″	No. 2 Com	
21,000′	5/4″	FAS	
97,000′	5/4″	No. 1 Com	
87,000′	5/4″	No. 2 Com	
75,000′	6/4″	No. 1 Com	
45,000′	6/4″	No. 2 Com	
QUARTERED SAP GUM			
10,500′	1/2″	No. 2 Com & Btr	
21,000′	5/8″	Com & Btr	
50,000′	4/4″	FAS	
54,000′	4/4″	No. 1 Com	
18,000′	5/4″	No. 1 Com	
PLAIN SAP GUM			
4,000′	1/2″	FAS	
20,000′	5/8″	FAS	
24,000′	5/8″	No. 1 Com	
84,000′	4/4″	No. 2 Com	

Yazoo Valley Lumber!

For centuries the Yazoo Valley has been growing as fine a quality of Red Gum as there is in all America. And it is from this rich source that Bellgrade lumber is selected. Bellgrade timber comes to us as fine in texture and quality as nature can make it and is then manufactured under expert hands right in our own band mills.

Without a doubt as good lumber as you can buy, and backed by a service you will appreciate.

BELLGRADE LUMBER COMPANY
Memphis - Tenn.

CANADIAN
WOODWORKER
and
Furniture Manufacturer

A Monthly Publication of Trade News and Practical Information, reaching the factories producing Interior Finish, Doors, Sash, Flooring, Boxes, Aeroplanes, Furniture, Pianos, etc.

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A Situation to be Faced

Many business men, manufacturers, wholesalers and merchants, seem to look upon the automotive industry as the one big menace to all other industries that cannot be classed in the automotive group, the thought being that this huge and growing industry is gathering in millions of dollars that would otherwise be spent to purchase every day commodities and every day necessities. Ask any millwork manufacturer why the total volume of residential building for 1923 was below that of 1922 or ask any furniture manufacturer why there is not more furniture being sold and the chances are that both will give the same answer—automobiles.

Undoubtedly there is good and sufficient grounds for this firmly seated conviction, for there is not the slightest doubt but that thousands and millions of dollars are being spent on motor cars and their upkeep that would otherwise go into homes and their furnishings. However realizing this fact and admitting it does not accomplish anything. The automobile is here to stay, it has long since passed the novelty stage, the demand is increasing rather than diminishing so that it will probably be a bigger factor in the industrial field during 1924 than in the year which is just closing. This is borne out by recent statements of three prominent automobile manufacturers to the effect that the automobile industry will equal, if not exceed, the prosperity it experienced this year. These men, however, predict good business for all, for they suggest that the prosperity of the automotive industry is a check or criterion of the buying power of the people.

This is the situation—it is likely that more money will be spent on automobiles during the coming year than ever before. Will this mean that business in other lines is likely to show a corresponding decrease? What is to be done about it? Certainly something must be attempted, for looking idly on is not going to carry an industry or an individual business organization very far toward the goal of increased prosperity. The trouble is to a certain extent that the automotive industry has been allowed to grow and develop without aggressive competition. While they took full advantage of the appeal inherent in their product through attractive attention getting publicity, painted glowing pictures of the desirability of owning a car and of the pleasures to be derived therefrom, there was no one to say to them nay, or to paint other equally attractive pictures and thus, in some degree at least, counteract the appeal being made by motor car manufacturers.

Further than that much of the prosperity of this industry can be laid to the fact that automobile men took full advantage of modern merchandising methods. They not only through their advertising created a desire for their product but through their partial payment plans they made it easy to buy a car. On top of that they gave and are giving every attention to production in an effort to produce cars at a price that will not be a deterring factor but which will assist in building sales. Is it not a fact that price recessions are more prevalent in the automobile field than in any other? It is not likely that this is just a chance happening.

It behooves those in the woodworking field to bestir themselves during 1924, perhaps to give less at-

The CANADIAN WOODWORKER wishes
Readers, Advertisers and Friends
A
Merry Christmas
and a
Prosperous and Enjoyable New Year

tention to the manufacturing end of their business and more to sales and the development of a market. Is it not a fact that it is more desirable to own a home than a car; that there is more real pleasure to be derived from an attractively furnished home than from an automobile, yet whoever saw page advertisements in our leading publications or attention getting billboard advertising emphasizing and picturing these facts. Is it, then, any wonder that money is going for cars that could better be spent in other ways. The general public is probably just as susceptible to the attractive home appeal as ever before, but the trouble is that such an appeal is not being made to them. Modern merchandising methods, backed by well planned publicity will win for woodworking the same as for any other industry. If business in any field is largely what those engaged in it make it, we have only ourselves to blame. Action is required. What will be the summing up at the close of 1924?

The Wood Toy Industry

A stroll through the toy departments of leading stores seems to indicate that there has been a gradual evolution in the character and type of the toys that are being offered for sale at this season of the year, a change in favor of well made, attractively finished wood toys. While wood toys have always been on the market in a limited way, little attention was paid to the development of a wood toy industry until the supply of imported toys was shut off during the war. At that time there was an acute shortage so that toys of any kind were in demand and commanded a ready sale because there was little else to take the place of the former lines. The result was that almost anything in the shape of wood toys was quickly bought and great things were predicted of the Canadian wood toy industry.

The predicted development did not materialize however. Perhaps, this is not to be wondered at in view of the crudely designed, poorly finished wood toys that were at that time offered for sale. It stands to reason that a rough wooden toy engine with clumsy wooden wheels would not be in strong demand and could be sold only when there was little else to offer. Even at that time, however, it was found that well made, attractively finished wood toys sold largely on their merits. Consequently what expansion there has been, has been toward the production of well made, nicely finished toys in designs and types that are particularly suited to such a raw material as wood.

Roughly the toys on sale today might be divided into three groups, dolls, mechanical toys and wood toys. Of the three it is doubtful if the latter group is the smallest or least important. The wood toys being offered include miniature furniture, dolls furniture in profusion including kitchen cabinets, bed and dining room furniture, trunks, beds, cradles, and numerous similar articles. Then there are kiddie cars, coasters, wagons, dolls carriages, rocking horses, kindergarten sets, drawing boards, small desks and on into attractive lines of juvenile furniture. Most of these articles are strongly constructed and are selling largely on their attractiveness.

It would seem as if there is a growing market for dependable wood toys but such toys must be well made and at a fair price. One regrettable, though not unexpected, feature of toy market is that a considerable proportion of the wood toys being offered for sale today are imported. This should not be, for Canadian woodworkers should be able to at least take care of the requirements of our own market and should be able to compete with imported articles upon which a duty in excess of twenty-five per cent. must be paid. To those catering to this market and to those about to engage in the production of wood toys the main consideration should be "quality" followed closely by reasonable prices.

1924 Should be Good Construction Year

The total awards for Canadian construction for the month of November, according to MacLean Building Reports, Limited, Were $15,632,200, compared with $30,078,100 in October, and $21,453,900 in November, 1922. Residential building accounted for 42.8% of the November total, amounting to $6,692,700. Business building amounted to $2,834,900, or 18.1%; Industrial building, $733,400, or 4.7%; and Public Works and Utilities, $5,371,200, or 34.4%. The activity was distributed among the groups as follows. Ontario, 47.1%; Quebec 39.2%; Western, 10.6%, and Maritime, 3.1%.

Construction awards for the year to date amounted to $292,746,800, compared with $259,371,400 during the corresponding period of last year, an increase of 12.8%. During this period residential building shows a falling off of 6.6%, compared with last year; but continues as the most active type of construction, while business, industrial and public works and utilities show increases of 3.4%, 12.4%, and 53.1% respectively, over the some period. The activity was distributed among the groups as follows: Ontario, 48.5%; Quebec, 33.4%; Western, 15.2%; Maritime, 2.9%. The Maritime and Western sections are the only divisions to display less activity than last year.

There is no ground for pessimism in so far as the business outlook is concerned. Canada's position is fundamentally sound and the course of business is distinctly on the upgrade. The agricultural community, which has borne the brunt of post-war adjustment and deflation, is now in a much more healthy position as a result of this year's bumper crop. The influence of this improvement will be far reaching, for practically every line of business in Canada is closely allied or dependent upon agriculture. Leading industries have experienced a fairly profitable season. Labor has been well employed. Weekly bank clearings testify to heavier movements of goods. Railway earnings appear to better advantage. In some spots business is poor, but regarded as a whole, is in fair volume, and conditions warrant constructive policies It is evident that 1924 will witness considerable building activity—probably involving an expenditure of three hundred million dollars in the construction field. Much speculative building activity has been eliminated in favor of investment buildings and other high-class structures, while considerable activity may be expected in the engineering field. Building material prices and the labor situation seem to be fairly stable, and it is expected that in 1924 there will only be a slight secession in building costs.

It is impossible to make a perfect joint in wood without good glue, and reliable clamps.

What of the Coming Year?

Will Furniture History be Made During 1924?

Closing Year Not Satisfactory—Will Next Year Show Any Improvement?—Can Sales of Furniture be Built up and Market Developed?—Is Not Business Largely What Those Engaged In It Make It?

From the point of view of furniture and allied manufacturers the year which is just closing has been disappointing. During the early part of 1923 there was a fair demand for their lines, which gradually strengthened and improved as the spring and summer month approached, only to ease off quickly the latter part of May and early June. While a quiet period is expected during the mid-summer months, there is usually a satisfactory volume of furniture moving until well on in July. Faced with this extended quiet period furniture makers anticipated a renewal of buying on a fairly extensive scale sometime early in the fall months. This hope was borne out to some extent by conditions in the retail field. Here again, however, they are doomed to another disappointment for while business did pick up late in the fall it proved to be little more than a flurry, lasting only a few weeks. This is substantially the position of the industry, as it enters upon 1924.

While the increasing activity of the automotive industries and the large amount of money which is being spent for automobiles and their upkeep is usually given as the basic reason for the depression experienced by the furniture and associated industries there are other equally important factors. In some measure the conditions being experienced today are due to a negative state of mind on the part of the buying public. There is so much talk of poor business, scarcity of money, uncertainty with regard to the future and similar subjects that, unless the inducement is sufficient, the average person seems to have decided to play safe and to hold on to his money. Another feature that must be considered is the prices which are being asked for furniture, particularly on the part of retail dealers. There are those who believe that there is not any justification for exsting price levels in the furniture field and for the wide spread between wholesale and retail prices, which spread often exceeds 100 per cent.

Something Must be Done

Suppose for the moment that the present lack of demand for furniture is due largely because money that would ordinarily be spent on furniture and house furnishings is being used to purchase and operate motor cars, what are the furniture men going to do? Are they going to sit idly back, bemoaning the fact that their business is dwindling and let the automobile industry put them out of business? Whatever bearing the activity in the motor car field has on the furniture business it is a condition which must be met and resisted, for the competition from this source is likely to increase rather than show signs of diminishing.

Is furniture a commodity that can be sold or is it futile to make any effort to enlarge and develop the market? Is it? Would the same volume of furniture be sold if all retailers were to cease advertising and stop all active sales efforts? Undoubtedly the demand for furniture can be improved considerably through constructive sales efforts but the trouble has been and is, as suggested by A. Karpen in an article in the November Canadian Woodworker, that instead of taking active steps themselves furniture manufacturers have been content to let their industry drift along, dependent entirely upon the advertising and aggressiveness, or lack of it, of the retail trade. As long as this state of affairs is permitted to last, just so long will the furniture industry drift along almost completely at the mercy of extraneous conditions.

Increased Sales Coverage Might Help

D. D. Fennell, in addressing the National Association of Furniture Manufacturers recently, suggested that to increase the volume of business during 1924 furniture manufacturers need more sales coverage; greater elasticity in their sales. To quote in part: "If I were a sales manager running the selling end of a concern, and if I wanted, for instance, one million dollars' worth of business annually and I required ten men to get that business, I would carry a safety factor of five men all the time, so that if an apparent cessation of buying came along, these five men could keep me up to the point of production I wanted for my factory. Regardless of conditions, any man can keep his factory full, who is willing to use sufficient sales coverage to get the business.

"After all, business does not go up and down wholly because of extraneous conditions; it goes up and down depending upon the sales ability and merchandising ability of the manufacturer himself in a large measure. It is a marked fact that we in the furniture industry go along with all these extraneous conditions, rather than meet them by having sufficient sales coverage to overcome them.

"In the old days, and in another industry, I can recall that when we saw an indication of a drop in business demand we immediately added as many salesmen as we needed to bring us up to the production objective we had set; and I can remember year after year when some of our competitors were complaining of bad business, we did satisfactory business because we had sufficient sales coverage to get it.

"Gentlemen, I think that is one of the most important things to think about in connection with business for next year. I don't think there will be any drop in business to the extent of hurting any of us very much, but I do think that the level is going to go down in 1924, unless we, by advertising methods and sales methods, make sure that our coverage is sufficient to keep up to our production schedule.

"After all, next year we must fight for business and fight hard to keep it up to the level we desire; at the same time we can overcome this untoward possibility if we have sufficient coverage of territory to place the output of our factories. There must be a factor of safety."

This is not a complete answer to the problem of creating furniture sales, though it is one place to con-

sider. The stock is only half sold when delivered to the retail dealers. It is necessary to go still further and assist them by developing a market and educating the people to think, talk and buy more furniture. The "Furniture Weeks" which have been held in several Canadian cities this fall are good and can hardly help but be productive of results but this is only one small channel of activity. Similarly the organization of the Home Furnishings Bureau was another step in the right direction. That this did not work out to the satisfaction of all concerned does not reflect on the soundness of the fundamental principle that furniture sales can be increased through consistent, properly directed, co-operative effort.

W. Edward Showers, of Showers Bros. & Co., voiced almost the same opinion when asked for his views on 1924: "I have been keeping in pretty close touch with general conditions everywhere, in fact I enjoy doing this, and from my rather close observations I feel no concern whatever as to the future. I cannot help but take the attitude that furniture interests are not going to suffer. One trouble is that too frequently we are inclined to hold back—to mark time waiting for something which seldom happens—when we might be forging ahead, making progress, the very impetus of the movement carrying us into good business areas which might not at all have been enjoyed had we simply sat down with a 'Let George do it' determination and not endeavored to keep the wheels moving.

Rests Largely With Manufacturers

"Business today is much what those engaged make it. The manufacturer and the dealer in furniture can go out and make business for themselves if they see fit; and for a good while they have been doing this with a measurable degree of success which has added liberal percentages to the increases in sales over previous years."

There are those who will not admit that much can be done to develop a larger, more active market for furniture. The weight of evidence against that attitude is such that it is difficult to see how they can defend their position. Is it not true that some of the plants which are busiest today can lay their present activity to consumer demand created by a far-reaching aggressive sales and merchandising campaign? Is this not direct evidence of what is to be accomplished through a broad educational sales policy designed to arouse consumer interest and to increase consumer buying. What holds true in the case of individual manufacturers also applies to the industry as a unit. One Ontario furniture manufacturer when asked if he believed that an increased demand for furniture could be created was most emphatic in his answer stating that his plant would operate during the next two months on created business.

What Shall It Be?

There is no doubt but that the market for furniture can be developed and enlarged, and to a satisfactory extent. In view of that, are furniture manufacturers going to content themselves with whatever business may happen to be left to them by other industries or may happen to come to them during the coming year, or, are they going to get together, at the earliest opportunity, and adopt an aggressive salesbuilding policy that will bring in an increased volume of business? Would it not be well to take active steps to create an organization or a department of the Furniture Manufacturers Association that would take up this task of sales building. This work need not necessarily involve the expenditure of large sums in newspaper advertising for it is doubtful if, in view of the many other directions in which such a department could function, such money would be spent to the best advantage. This is a problem that should have immediate attention for to a certain extent, at least, the amount of furniture which will be sold during the coming year will depend upon the action taken by the industry itself. Will furniture history be made in 1924 or will the industry thankfully accept whatever may happen in the way of business?

How Is Business?

The question "How is business?" is one that is being worked overtime today and to no good effect. Usually it leads to a discussion of all the discouraging, pessimistic features, some of them imaginary, that can be brought to mind, and when finished both parties are, if anything, a little more discouraged and a little more confirmed in the conviction that good times are not for us, than they were before.

Such a habit, while undoubtedly the result of thoughtlessness, is most vicious in its effects. While nothing is gained by shutting one's eyes to present day conditions and to all influencing factors and blindly proclaiming that business is booming, like the dyed in the wool optimist who fell out of a twelfth storey window and happening to see a friend at the fifth floor window, shouted as he went by "Everything is all right so far," yet much is to be gained by looking on the bright side of things rather than dwelling on the negative tendencies. It is generally conceded that in many lines the demand should be stronger than it is and further that the negative, pessimistic attitude that is all too prevalent, is one reason why buying and building does not more nearly approach what it should. However, there are many bright and encouraging features if one would but look for them.

One sales manager realizing the depressing effect of this kind of conversation discussed the matter with his men. He suggested that they should not answer the question "How's Business?" by entering into a discussion of conditions, good or bad, but be ready with a definite, concrete example of business prosperity in the enquirers own line. "Never ask a man how business is," he advised, "Always assume that it is good. If he asks you the question, tell him how So-and-So is increasing sales. Don't waste time talking business conditions—show him how to make 'em better."

January Furniture Exhibitions

The semi-annual furniture exhibitions will be held at Kitchener and Stratford from January 7th to 19th. The exhibition which has been held in Toronto for a number of seasons has been abandoned. Some of the outside manufacturers are showing at either Stratford or Kitchener, and there is a possibility that the Hanover furniture men will stage a show of their own. It is rather regrettable that the Toronto display is being omitted this year because in the past it has been a good drawing card.

Fitting and assembling large reredos. This will be taken apart and shipped K.D.

Corner of carving department showing some of the work going through

An Interesting Furniture Plant

Description of Plant of Globe Furniture Co., Limited, Waterloo, Ont.—Special Equipment Used in Production of Church, School and Lodge Furniture— Do Considerable Export Business

The production of church, school and lodge-room furniture is a separate branch of the furniture industry requiring highly specialized plants and specially trained workmen. One of the more prominent of these specially equipped factories is that of the Globe Furniture Co., Limited, Waterloo, Ont. This business was founded in Walkerville in 1889 and was moved to Waterloo in 1909. In 1911 there was a change in ownership and management and J. Bahnsen, the present manager, was placed in charge. Mr. Bahnsen had considerable experience in the manufacture of church and school furniture with several well known American organizations before assuming charge of this company and, as might be expected, he brought with him a wealth of practical experience which has been used to good advantage in developing and improving the plant.

Special Equipment Developed

Some of this practical experience was translated into special automatic equipment. Thus we find one special machine in principle something on the order of a double end tenoner though in result it is vastly different. The seats and tops for school desks are fed through this machine and in one operation both ends are trimmed and shaped or rounded and at the same time the dovetailed or scalloped groove to accommodate the desk ends or seat brackets are cut. Further than this the curved seats go through the same as the flat pieces, the machine taking care of the curve when shaping the ends and cutting the grooves. Another special piece of equipment is something in the order of an endless bed double surfacer. This shapes or moulds the two sides of the curved school desk seats at one operation.

The stock for the desk tops and seats is first cut to length and ripped to standard widths. The next operation is straightening on a Herzog jointer and then the pieces are surfaced. The jointing is done on a Linderman machine. One of the two in operation has a tilting bed enabling the edges to be jointed at any angle. By varying the angle or bevel when jointing the school desk seats the rough seat panels conform to the curve of the finished seat. It is these pieces that are dressed to shape on the two sides on the machine just referred to.

The stock for the various types and sizes of standard school desks, which is usually birch or maple, is made up complete and finished and then stored K. D. awaiting shipment. The school desk business is seasonal in that the bulk of the desks are bought during

An attractive oak pulpit nearing completion

the summer holidays. The demand at that season of the year is away beyond the capacity of the plant, necessitating that the parts be made ahead and stocked previous to this seasonal rush. As would be expected a certain proportion of these finished parts are carried over from season to season so that with working well ahead a considerable amount of capital is usually tied up in desk parts.

Making Circular Pews

The church and lodge furniture end is just the opposite being practically all special work to individual designs. This means that it is all made up to order. The church pews may be divided into two main groups, straight and curved or circular. The former are made with solid seats and laminated backs while the latter have built seats and laminated backs. Few special problems are involved in the production of

straight pews other than those dependent upon the design and details of the pew ends. Of course this assumes that the stock is properly seasoned and that every attention is given to jointing and machining. The Globe Furniture Company have developed certain details of construction that are applied to all their pews and which tend to ensure an extremely satisfactory product.

As would be supposed the production of circular pews present some interesting problems. For instance the backs of certain types of pews have what is called a compound curve; that is there is a horizontal curve to conform to the circular shape of the pew and in addition there is a vertical curve to conform to the human back and thus make the pew more comfortable. In addition, in an installation of circular pews

View in finishing room showing sections of altar rail

the radius of each row of pews is different so that both seats and backs for each row must be laid to a different curve.

Instead of having a whole series of shaped forms to conform to the different shapes and radii required an ingenious adjustable form has been developed to take care of the backs and another to handle the seats. These forms are quickly adjustable to any horizontal curve so that a whole installation of pews may be laid up on them. The vertical curve of the back is taken care of by shaped cross pieces which are used about the same as retaining clamps in laying up panels, except that each series of backs is laid up, clamped separately and then removed and allowed to dry while the form is set to the next curve and another series of backs put in.

The circular seats are made up of one inch by two inch strips, which are bent to the required curve at the time they are glued together. Both the curved and straight pew seats, unless they are flat, are shaped in a planer carrying knives of the required contour.

Heavy Resawing Involved

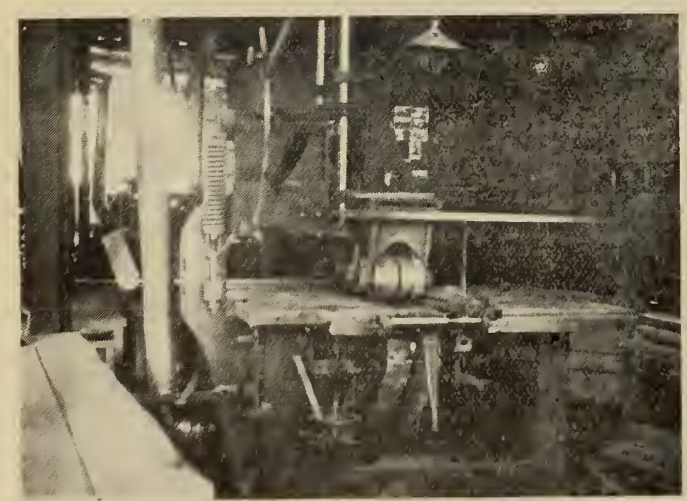
As suggested before, the backs are of laminated construction being made of three ply. The outer ply may be ash, oak, walnut, mahogany, elm, etc., depending on the wood called for. The back pieces are jointed and glued, then dressed in a double surfacer. They are then resawed. As these pieces are as wide as the back is high, say twenty-four inches, the resawing is no light task. A very slow feed is carried, from 3 to 5 feet a minute, and the task is slowly but surely accomplished. These thin pieces are dressed and the outer surface sanded and are then ready for laying. The glue used for the laying of the backs and the jointing up of the curved seats is vegetable glue and is proving extremely satisfactory.

The ecclesiastical department takes care of all the special church and lodge furniture. Here the individual pieces are assembled. The work is exacting calling for a high degree of skill. In the case of some of the larger pieces, such as the reredos shown in one of the accompanying illustrations the piece is assembled and fitted and then taken apart again and shipped K. D.

As much of this work requires considerable hand carving, a carving department has been established which gives constant employment to a number of skilled artists, for that seems to be an appropriate term to apply to men who have the ability to work out intricate and artistic designs in wood. Included in the work of this department is wood statuary of different kinds.

In the finishing department, all coats with the exception of varnish are applied by hand. In the case of varnish wherever the work permits the spray machine is used. This latter has been enlarged to accommodate some of the larger pieces such as completed pews, sections of altar rails, etc.

At the present time they are operating with electric power, having installed seven motors during the



Jackson Cochrane straight edging saw in Globe plant

Router, with overhead stationa y guide, for cutting seat and back grooves in pew ends

last year. The steam plant is still available and may be put into operation should the electric current be off for any length of time. Of course the steam boiler is in constant use, to supply the requirements of the plant and to take care of the National dry kilns.

Dry Kiln Giving High Output

The latter were installed about two years ago and are working out satisfactorily. They are of the automatic control type and each day the controlling instruments are adjusted to conform to the schedule followed. Formerly with six old type compartment kilns the dry stock requirements of the plant were in excess of the capacity of the kilns. Now with two compartments having but one-fourth the area of the old kilns, one compartment is sufficient to supply the factory with dry stock while the other one is kept going on custom drying. This is a striking example of what can be accomplished with modern drying equipment, intelligently operated.

The machine department is well equipped with modern tools. In addition to the special equipment mentioned, such machines as Yates double surfacer, Whitney double surfacer, Preston ball bearing buzz planer, Yates band resaw, Jackson Cochrane straight edging saw, are in operation, in addition to the necessary complement of shapers, boring machines, sanders, etc., etc. At the present time the group drive is used, the transmission shafting all running in ball bearings, thus effecting a worthwhile saving in power.

Do Considerable Export

The factory itself is a four storey brick structure providing floor space of about 80,000 feet. It looms up above many of the buildings in that section of Waterloo so is a more or less familiar land mark. A staff of about 125 hands is kept busy taking care of the work going through.

The Globe Furniture products are known in many sections of the world as they have an extensive export connection. Shipments to Australia, New Zealand, South Africa and other countries are quite common. They supplied the pews for the $3,000,000 church of the Latter Day Saints (Mormon) at Cardston, Alberta. This consisted of pews in walnut, mahogany, oak and ash for the four chief places of worship in the structure.

Twenty-four Sash For $13.95

Ideas of Sash Costs Vary 300 Per cent. in Nineteen Plants—Does Variation Lie With Cost Systems or With Way Cost Knowledge is Applied in Estimating?—Don't be too Sure That You Are Right and Others All Wrong

The term "sash and door factory" is commonly applied to millwork plants supposedly because these two items go to make up a good proportion of their output. Undoubtedly sash and doors are staple lines with most woodworkers which in itself would seem to suggest that there should be some reasonable degree of uniformity in the ideas of sash costs which are held by different manufacturers. In view of this the estimates of sash costs on a typical sash order which appear elsewhere in this article may occasion considerable surprise, for they show a variation of over 300 per cent.

Another point that should not be passed without comment is the fact that practically without exception the cost estimates appearing in this study were submitted by concerns who operate supposedly accurate cost systems. Does this mean that the cost keeping method in operation is anything but accurate or does the fault lie in the way the information secured from the cost records is used or misused. There would seem to be something in the latter suggestion for the manufacturer who filled this order submitted a cost estimate practically four dollars lower than the actual cost as shown by his own records. This would seem to suggest that either a mistake was made in taking off the cost estimate or that basis upon which the estimate was made does not bear a true relation to prevailing costs. Of course one instance of this kind does not prove anything for the cost of the order under consideration may be four dollars higher than it should have been. It does seem to suggest that the cost data secured is not being used to advantage in giving estimates.

One woodworker just revised his cost system. He found that his former cost basis was away too low as applied to sash, with the result that he was losing money on practically all sash business. That is good as far as it goes, for it is certainly desirable that all cost systems should reflect true costs. The noteworthy feature is that the estimate of cost from this organization, supposedly based on the revised and improved cost system, is the highest one in the list.

Sash Cost Estimates Submitted

No.	Material	Waste	Bench H.	Rate	Machine H	Rate	Com. B	Total
1.	90	10%	2	$ .85	5	$ .90	15%	$13.95
2.	105	20%	2	.83	6	.90	16%	16.99
2A.	106	25%	..	..	6	1.10	15%	17.46
3.	100	20%	3	.90	5	.95	15%	18.73
4.	85	30%	4½	.85	7	.90	20%	21.60
5.	99	25%	3½	.85	8½	1.10	20%	22.69
5A.	82	33%	8	.55	12	.60	20%	23.67
6.	106	20%	3½	.95	5	1.05	18%	24.47
7.	**113**	**25%**	**1½**	**.85**	**11**	**1.10**	**20%**	**26.22**
8.	112	25%	3½	.95	8	1.35	15%	26.71
9.	115	25%	5	.80	7½	1.10	20%	27.95
10.	122	15%					33%	28.32
11.	134	20%	9	1.00	6	1.00	20%	29.59
12.	136	15%	5	.75	9	1.23	20%	32.62
13.	105		12½	.75	11½	1.00	20%	33.88
13A.	128	10%	7	.80	12	1.00	....	34.64
14.	110	25%	10	.85	10	.95	20%	36.16
15.	145	20%	9	.90	8	1.00	25%	44.65
16.	90	15%	12	.85	18	1.07	20%	50.33

While there is bound to be some variation in costs at different plants due to a difference in men, methods, material and equipment, yet this should fluctuate within comparatively narrow limits. Similarly

costs on the same class of work will vary in the same plant from week to week or even from day to day. Here again such variation should not be very great. With this in mind it is difficult to give a reason why an estimate of cost based on an improved and supposedly accurate system should be so much higher than the average. It is easy enough to say that the system must be in error or that a mistake may have been made in estimating the cost, but that does not explain or decide anything. If this figure comes near what should be the true average costs, then it might be said that the rest make a pretty sorry showing.

If the cost estimates shown herewith are a true reflection of the costs which actually exist in the different plants from which figures were secured, it readily explains why some woodworkers find it more profitable to buy their sash than to make them. Taken in the same light these figures further suggest that it would certainly pay some of those having high costs to analyse their methods and check over their equipment in an effort to bring their production costs into line with those of competitors. On the other hand if these figures do not indicate accurately the cost levels which are obtained in the different plants, then both the high and the low men should give thought to their method of recording costs and the basis upon which they do their estimating. These cost studies should do more than bring out and emphasize the wide variation in estimating and quoting which exists in the millwork field for they provide readers of the Canadian Woodworker a basis by which to check up their own cost, estimating and manufacturing methods. The average of all the estimates received is $27.80. The actual cost kept on the work is $26.22. Allowing for difference in wages and material costs, it would appear as if around $27.00 or $28.00 is a fair average cost.

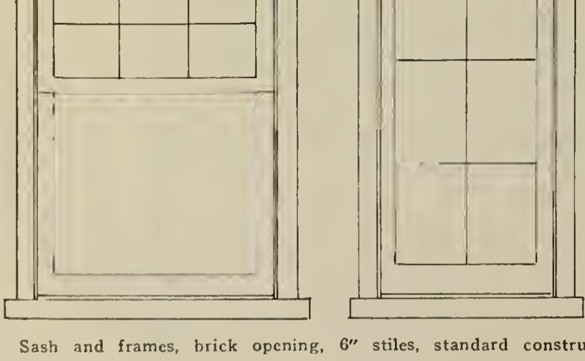
Details of Cost Figure

Material		
One hundred thirteen ft. Pine at $60.00	$6.78	
Waste	1.69	
		$8.47
Machine 11 hrs. at $1.10 (Burden Included)	12.10	
Bench 1½ hrs. at 85c. (Burden Included)	1.28	
		$13.38
		$21.85
Commercial Burden		4.37
Cost		$26.22

Estimate No. 8 comes very close to the actual cost, which is No. 7, there being a difference of only 50c. Similarly the estimate of material included in No. 8 coincides closely with that shown on the original. A glance down the material column shows a variation of about 70 per cent. or from 85 feet to 145 feet. This should not be. The amount of material should be the same in all plants, any difference in grade being reflected in the waste allowance. The waste allowed runs from 15 to 30 per cent. As this would depend largely on the class of material used, the only comment that might be made is that 15 per cent. is comparatively low and requires careful checking. One estimates 1½ hours bench work, another 12½ hours, a variation of 800 per cent. The machine time is given in one estimate as 5 hours, and as 18 hours in another or over 300 per cent difference. Do such differences actually exist in the industry or, as is more likely, is there something wrong with the cost systems and with the basis upon which these estimates were made?

The subject selected for this study has resulted in so many interesting points being raised that a similar subject has been selected for the January cost article, namely an order for sash and frame. Perhaps some of the features touched upon in this month's study will be cleared up by the estimates which will be submitted for January. You are cordially invited to participate and send in estimates on all subjects selected from month to month, in fact your co-operation is needed to make these articles an outstanding success. Will you not send in your figures for the January issue?

What is Your Estimate of Cost on This Order?



Sash and frames, brick opening, 6" stiles, standard construction

Order for Frames and Sash

1	Cas. Frame for Sash	2-0 x 3-6 x 1⅜	op. in.)	Cam.
1	Cas. Frame for Sash	2-0 x 3-0 x 1⅜	" ")	Head
1	2 Mull. Cas. for Sash	2-1 x 4-11 x 1⅜	" out)	Square
2	Cas. Frame for Sash	1-2 x 4-11 x 1⅜	" ")	Head
1	Box Frame for Sash	2-6 x 4-6 x 1⅜		
2	Mull Box Frame for Sash	2-6 x 5-0 x 1⅜		
2	Mull Box Frame for Sash	2-0 x 5-0 x 1⅜		
2	Box Frame for Sash	2-6 x 5-0 x 1⅜		
1	Cas. Sash	2-0 x 3-6 x 1⅜	6 lts.	
1	Cas. Sash	2-0 x 3-0 x 1⅜	4 lts.	
3	Cas. Sash	2-1 x 4-11 x 1⅜	12 lts.	
2	Cas. Sash	1-2 x 3-11 x 1⅜	8 lts.	
1	pair ck. Rail Sash	2-6 x 4-6 x 1⅜	2/5 & 3/5, 6/1	
10	pair ck. Rail Sash	2-6 x 5-0 x 1⅜	2/5 & 3/5, 6/1	

Relation of Architect to Millman

Room for Closer Co-operation Between These Two Important Divisions of Building Industry—Views of Number of Architects—Some Pertinent Questions

By Ellis F. Lawrence, Architect

The most promising thing on the horizon just now is the co-operative movement between individuals and between groups—seeking to solve common problems, such as the elimination of needless waste and duplication of effort, and the securing of efficiency and justice in production. Democracy itself is on trial today. Without the co-operative spirit, democracy will fail, for democracy is co-operation, in the last analysis.

You of the Western Planing Mill and Woodworking Association are to be congratulated, for your co-operative movement is bearing fruit already. Only a few years ago, in this locality, the millman was the most cursed member of the building industry. Had I then sent out, as I did last week, a request to architects to give me their criticisms of the planing mill, I should have been deluged with complaints. Today, out of 27 such letters to architects, I have received but four answers, and these, as you will see when I read them, are gentle, mild and quite harmless.

Higher Standard in Planing Mill Industry

In conversation with my fellow architects, the criticisms formerly prevalent are absent. The other day I met a prominent contractor of this city—one with whom my organization has put through many projects. I asked him what I could constructively bring out in this talk. A few years ago his chief complaints on the job were directed against the planing mills—for inaccuracies, for delays and broken promises, for workmanship, even for lack of honesty of purpose. He told me he had no complaints whatever. To be sure, he deals now with one mill and is done with competition, both between himself and his client, and between himself and his planing mill—a mill that evidently believes that service and right prices bring steady business.

I cite these, not to indicate that I believe the service of the planing mills cannot be improved further, or that they have solved all their troubles, but because, in all fairness, your association deserves great credit for your achievements in this co-operative undertaking. I only wish that, during these last few days, the architects in this locality had been able to do as much in their field, upon which you all in the building industry depend largely for your own success or failure. With inferior or corrupt architectural service, you are seriously handicapped. With skilled, honest service, your business is facilitated.

Opinions of Architects

The first letter from the architects I shall read touches on the co-operative idea in an interesting manner:

"I had just read of a speech by Sam A. Lewisohn, vice-president and treasurer of Miami Copper Co., when your letter came asking for suggestions for your paper at the planing millmen's convention. You may have read it, but I am going to quote the following:

"'Now, if we stop for a moment to analyze what are the main things we are striving for in our industrial system—a system which is, of course, if anything, more important to us than our political system—I think we can safely say there are two main things, the greatest possible production, and the maximum development that is possible for each human being involved in that system, consonant with a reasonable effectiveness from a productive point of view. They are both important. We want production, but we don't want production that will cripple the human beings in the system morally, emotionally or physically. We want the self-development of the human beings in the system, but any scheme for developing them must be shaped, of course, to assist and not to retard them.'

"It seems to me that this applies to our planing mills quite as much as to any other industry. I think our mills are doing better work than they did a few years ago, and I think they are trying harder. None of the mills have refused to bid on high-grade work, as one of our best mills did a few years ago, on the plea that they couldn't make any money out of specially designed work. This was because they had plenty of orders for stock stuff that could be pushed through the machines by unskilled workers, and that it was next to impossible to obtain cabinet makers. You know the story—the need for speed and quantity has smothered quality, and the best that we can get today is not good enough, though it is better than we were getting a short time ago.

"I don't believe I can give you anything that has not been said many times. All we can do is to encourage as much as possible the pride in good workmanship. The millmen should get this incentive across to the men, and the men should be treated as human beings, even if they do run machines."

Causes of Trouble

The second letter is as follows:

"The chief causes of trouble I have experienced with planing mills are these:

"1. Promises of delivery are not always honestly made and too often jobs are unreasonably delayed.

"2. Trouble with doors. Outside doors and garage doors should not be glued, but doweled and nailed. Some mills persist in sending out glued doors for outside work.

"3. French door glass is too often set on a strain, causing a large number of broken lights months after the completion of the job.

"4. Glass in sash should be back-puttied. I have had considerable trouble with driving rains going through puttied glass.

"5. I think it would be better if the double rabbeted door jamb were eliminated and a plain jamb used with a square top, then it can be sanded and the stop can be adjusted to the door. Most double rabbeted door jambs are not straight and need to have the inner edges cleaned by hand.

"6. Mills should standardize on mouldings and cooperate with the architects in getting good lines.

"7. More care should be used in matching woods

*Address, Western Planing Mill and Woodworking Association.

when same are glued together; recently I had a glued-up mahogany handrail come on the job with part of it almost white and part black.

"Briefly, these are a few of the things that I have noticed in the deficiencies of the planing mills."

Importance of Prompt Delivery

From my own experience, I feel that item No. 1 in this letter should be stressed. I have had a few jobs during the last eight or ten years where, what seemed an unnecessary delay, did not come from failure to receive millwork when needed. I grant that the indictment must also rest on the shoulders of contractors who are inclined to do shopping, or who fail to place their orders in time—and upon architects, too, who fail to deliver complete plans and F. S. details on time. Great financial loss accrues from this on both contractors and owners. Just now we have a case in our office to be adjusted, where an apartment house was delayed four months in completion. The owner lost his loan, and, he thinks, four months of rent. The contractor will undoubtedly be penalized before a settlement can be made.

Recognizing fully that all lines in the industry have recently been strained to the breaking point—still, ways and means should be found to overcome this fault in the system. At least, a definite date of delivery should be given by the mills, based on delivery of details and information. This would at least fix responsibility.

Another architect dwells on the failure of the mills to properly match their woods in each unit of work, as to color and as to grain.

A well-known manager of estates, who architects on the side, writes: "I have no suggestion to make in this matter," indicating that he, too, must have a mill behind him that delivers service.

Charging for Estimates

From the fourth letter, I quote:

"We think this is a move in the right direction, because we notice that Geo. M. Cornwall, editor of The Timberman, has been working hard to get the millmen to charge for estimating work. We feel if the planing mill men and the architects could get together on this matter, it would be much better for both of us."

Time was when inaccuracies in measurements in mill work, caused us much trouble; also when liberties were taken with contours of mouldings, but of late we have had little trouble along these lines.

We still believe that failure to deliver kiln dried stock is too prevalent. There are shyster mills, as there are shyster architects. It's a pity that we cannot at least work out some system in which the legitimate operators are officially recognized. Certainly a mill taking a contract to deliver kiln dried stock is getting money on false pretenses if it does not do so, and it is doing legitimate business and the reputation of the architect involved, much harm. Dairies, restaurants, schools are rated. Why not planing mills?

Millwork Stock Book

Lack of standards in presentation and in specifications are serious handicaps, though easily overcome if the right basis of co-operation between architects and millmen is established. However, there is no excuse for deliberate liberties being taken with standards. I regret that we still find some mills substituting 16-ounce glass for best 21-ounce AA selected as specified, explaining perhaps why competitive figures are so varied. The lower bidder does not always deserve the job under existing methods. How much easier and fairer would the competitive system be if business morality was such that the low bidder always deserved and got the job?

We recognize, as architects, the value to your group of "stock" business, though we dislike to see it dominate or crush out the special work. In much work we would use "stock" if the mouldings and designs were to our liking, and we were furnished with full information. Unfortunately, what is "stock" in one mill may not be "stock" in another, and when we design, we do not know what mill will get the contract.

Need for Millwork Stock Book

The architect is expected to know everything about everything in the building game. He does not because he cannot. Why not give us the benefit of your expert knowledge in a booklet on "Technical Information on Millwork?" Tell us about methods, such as:

How wide a moulding can be solid stuck on a door stile?

How wide a panel mould can be used safely without a spline?

Is it safe to veneer a door with one kind of wood on one side, and another kind on the other side?

When should 3-ply and when should 5-ply panels be used?

How thick a veneer should be used on door stiles?

What are the limitations on machine carving?

How large a moulding is it practical to stick in one piece?

How large a door is it advisable to make three-quarter inch thick?

How large a door is it advisable to make one inch thick?

How large a door is it advisable to make one and three-eighths inch thick?

How large a door is it advisable to make one and three-quarter inch thick?

A list of don'ts might save us trouble, such as:

Don't use veneered work where exposed to rain or moisture.

Don't expect a first-class enameled job on flat-grained fir, etc., etc.

Explain the mill list and the Central Listing Bureau, and it would be excellent to define minima standards of plans, specifications and full size details from your point of view.

Such a document approved by your organization and accepted by our organization would serve as an excellent basis of practice between millmen and architects.

Get the architects to go through your best mills in groups. The broadminded will relish the opportunity. Look out for the ones who resent such an invitation. They know it all, anyway, and can't be told.

In general in the Northwest, building standards are lower than in the East. The public should be educated. More hardwood should be used. Why not furnish the architect with information concerning local stocks of hardwood, relative prices—samples and other technical information?

Value of Quantitative Surveys

Your genial Mr. Cornwall has of late been delnging us with orange cards, entitled "See the Hole—Hang Me Up." They are challenging. But what if

(Continued on page 62)

Disposing of Shavings and Sawdust

Markets Largely Local Calling for Individual Initiative—Uses To Which This Waste Material is Being Put—Should be Baled for Convenience in Handling, Permitting Sale of Bale or Two

The disposal of shavings and sawdust at a profit or even at a price that covers the cost of handling is a problem that is confronting woodworkers in many sections of the country. When steam power is used the problem usually solves itself for this waste is then burned under the boilers and tends to reduce the coal bill. There are those who suggest that even in steam plants, owing to the relative low heat value of shavings, it would pay to bale and sell the shavings as the price received would more than secure the equivalent in heat units were coal to be bought. Perhaps this is true, provided a fair price could be secured and a steady market found, but the trouble is to find the market.

There does not seem to be any one or even a number of markets that can be depended upon to absorb a regular quantity of shavings and sawdust. This statement must be taken in a general way for through individual initiative a number of woodworkers have found or developed satisfactory markets for this refuse. For instance one Ontario manufacturer ships all his sawdust in carload lots to Nova Scotia where it is used in smoking and curing fish. A Vancouver woodworker has found a similar market on the West Coast, while others have been able to dispose of varying quantities in different ways. In addition, several American concerns who deal almost exclusively in sawdust and shavings often find it necessary to buy in Canada. However this outlet is not very extensive and is only available to those so situated that the freight rate to U. S. centres is comparatively low.

Is More Convenient Baled

In marketing this material it is usually desirable that the shavings and sawdust be kept separate and that the former be put up in bales. This requires either a hand or power operated baling press and while adding slightly to the cost, facilitates handling and is absolutely necessary in the case of carload shipments. The baling of the shavings, even for disposal in the local markets, provides a recognized basis for establishing a price. There does not seem to be any uniform level of values, prices ranging all the way from fifteen to forty-five or fifty cents a bale, depending on conditions and on how much the customer will pay.

A Toronto woodworker bales all his surplus shavings, some of which are sold to apartment houses for an off-season fuel. The balance he stores in his yard to be used under the boiler during the winter months when additional fuel is needed to keep the plant comfortably warm. When baled, shavings can be stored to advantage in an open shed, occupying a minimum of space.

In practically all centres a limited market for this refuse can be developed. Shavings are at times sought after for fuel, bedding for horses and cattle, for packing purposes, for use in large auditoriums and similar buildings and by farmers for mulching around fruit trees and vines. Some of this business could doubtless be secured by a small advertisement in the local paper. It is desirable however that the shavings offered be baled for handling and storage purposes.

Uses for Sawdust

There are many uses to which saw dust is being put but the trouble is that few of them require this material in worthwhile quantities. As a suggestion some of these uses are being listed, doubtless others will suggest themselves: Fuel in furnaces and stoves; fuel in gas producers; briquettes; fire lighters; fur dressing; meat smoking; absorbent on floors, in cuspidors, etc.; fire extinguishers; cleaning and drying

Pile of Baled Shavings In Yard of Ontario Plant

agent for metals, machinery, etc.; bedding in stables; composition flooring, artificial wood, etc.; ethyl alcohol; distillation and extraction; hardening and annealing of metals; packing of all kinds, bottles, canned goods, etc.; heat insulation in cars, ice houses, etc.; sound deadening in floors, etc.; shipment of meats, shipments of grapes and other fruit; manufacture of soaps, manufacture of fertilizers; packing of ice cements, mortars and plasters; burning clay products; manufacture of wood flour; purification of gas; composition paving blocks; floor-sweeping compounds; manufacturing of oxalic acid; manufacture of carborundum and calcium carbide; protection of fresh concrete from too rapid drying; manufacture of illuminating gas; manufacture of wood meal fodder; manufacture of oatmeal wall papers; manufacture of velvet wall papers; lettering on floral emblems; manufacture of dyes; railroad signal rockets; medicinal purposes; stuffing pin cushions and dolls; manufacture of fireworks; circus rings; dressing wounds; moth preventive; coloring black clay pipes; drying ink; waterproofing mixtures; currying animals; tanning extracts; filtering medium. Shavings could also be listed under many of these headings.

Wood Refuse as Cattle Fodder

Wood refuse for cattle fodder is a new development that may offer a dependable outlet for shavings and sawdust. This was touched on in the November Canadian Woodworker from which the following is quoted: "Some time ago the Forest Products Laboratory at Madison, Wisconsin, discovered that by treating sawdust with diluted sulphuric acid, which was afterwards neutralized by lime, a very satisfactory cattle feed resulted. After the lime and acid have been eliminated there remains a soft, bran-like food containing about 15 per cent. of water and rich in sugars. The laboratory experimented on three cows, who confidingly ate the modified wood that was fed to them and justified their faith by putting on fat and giving more milk. The Department of Agriculture is now experimenting with several hundred cattle in various parts of the country with a view to confirming the Madison test. Immense quantities of sawdust are wasted at present because there is no way of using it economically. And if wood cattle food can be produced cheaply enough there will be a big market for it.

The problems of the satisfactory disposal of shavings and sawdust largely resolves itself into a matter of individual initiative. The material can be sold but may require a little effort and ingenuity to uncover profitable markets. In the smaller centres the placing of a bale of shavings with a "for sale" sign on it, in some prominent place in front of the plant might arouse interest on the part of rural customers and might result in a fairly steady trade being developed. A sign may be displayed in some prominent place or as suggested before an advertisement might be run occasionally in the local press. Sometimes nearby manufacturers are glad to secure this material for fuel but as a rule they do not want to pay anything for it.

(Readers who are in a position to give information on available markets as found by them or who can offer constructive suggestions will be conferring a favor on their fellow woodworkers by sending such information or suggestions to the "Canadian Woodworker."—The Editor).

Canada Represented at Recent Box Meet

G. S. Zimmerman of Canadian Organization Elected to Directorate of National Association of Box Manufacturers—Cost Work and Better Design of Boxes Discussed—Box Makers Must Take Steps to Meet Substitute Container Competition

In joint session with the National Association of Box Manufacturers in their semi-annual gathering held recently at New York was the Eastern Canada Box Makers Association representing the box manufacturing industry of Ontario. G. S. Zimmerman, Tavistock, Ont., President of the Canadian Association was elected by a unanimous vote to the Board of Governors of the National Association.

Mr. Zimmerman presented a brief report as follows: "Our Eastern Box Association just came to life about seven months ago, so you see we are just beginners.

"We have about 75% of the box manufacturers of the Province of Ontario in our association. We are hoping to see the manufacturers in the Province of Quebec and New Brunswick join our Association and we feel it is only a matter of a short time before this will go into effect.

"Our organization has gotten down to work; we have adopted uniform methods of cutting certain thicknesses of stock, etc., but with a few exceptions, it is similar to that adopted by your Association. We are working on a cost accounting system.

"The outlook for the box manufacturer, while not as promising as we would like to see it, yet on the whole it is much healthier than a year ago. March, April, May and June business was placed freely; July and August rather quiet, September a slight improvement, and we expect it to continue to be fair, and on the whole, better than last year."

The following were among the Canadians present: D. E. Elliott, C. Beck Mfg. Co., Ltd., Toronto & Penetang, Ont., Canada, R. A. Aitken, G. & J. Esplin, Ltd., Montreal, Que., Canada, A. H. Vanderburgh, Firstbrook Bros., Ltd., Toronto, Ont., Canada, C. Booth, Martin Freres & Co., Ltd., Montreal, Que., Canada, G. H. Watson, Meyer-Thomas Co., Montreal, Que., Canada, J. W. Thomas, Meyer-Thomas Co., Montreal, Que., Canada, T. M. Murphy, Meyer-Thomas Co. Ltd., Montreal & Granby, Que., Canada, J. M. Labonte, Pariseau Freres, Ltd., Montreal, Que., Canada, J. A. Pariseau, Pariseau Freres Ltd., Montreal, Que., Canada, A. Wilson, Wilson Bros., Ltd., St. John, N. B., Canada, G. S. Zimmerman, Zimmerman Bros., Ltd., Tavistock, Ont., Canada.

Secretary Pease of the National Association in his report touched on the necessity for more attention to cost accounting methods. To quote in part: "During

the past six months I have called upon many box manufacturers, both members and non-members of the Association. I have also attended a number of local meetings held by manufacturers in various association districts. Through my calls I have been more and more impressed with the necessity of our organization taking a more definite stand as regards cost accounting. One of the greatest needs of the industry today is an accurate uniform method of ascertaining manufacturing costs.

" While I have been able to interest a number in the use of the "Differential Price List," it will take some time before that method will be used by the industry as a whole. Those who have made it a part of their office machinery have found it to be of great benefit and I believe the time is coming when the "Differential" will be used by a big majority of the manufacturers of wood boxes. The "Differential" is not a cost-finding system. It will, however, be of great assistance to the man not knowing his costs, for it will give a differential that can be used in figuring the sales price of containers having extra operations such as cleats, printing, etc."

Better Designed Boxes Needed

Emphasis was also laid on the need for a more intensive study of box design and on the fact that business was going to substitute containers that could be retained by the wood box industry through the redesigning of the boxes of individual customers with a view to increasing strength and at the same time reducing the weight.

"The time has come when we must take a definite stand for lighter and better wood boxes." To quote further from Secretary Pease. Our industry as a whole has been somewhat slow to see the necessity of applying technical knowledge in manufacturing and marketing its products.

"Manufacturers of boxes other than the sawed wood box represented by this association are presenting their commodity to the public in advertising matter that will appeal to the shipper. As a rule such advertising calls the shipper's attention to the money that can be saved through using their container, the saving being made either in the first cost of the box or in its lightness as compared with the ordinary wood box. There is no question but what such advertising will have the tendency to influence the shipper to experiment with the advertised box. It is possible for me to name box manufacturers who have lost considerable business to this new container, which loss would not have occurred, or at least, not so great as eventually felt, if the box manufacturers in question had some time ago followed available technical information and of their own volition advocated changes in the design of their customers' cases. It is far better to anticipate the customer's desire for a lighter and as efficient box and to go to him with a willingness to redesign his boxes so that he will secure the most efficient container. In the majority of instances it will necessitate the use of metallic strapping and I believe it necessary that members of this association be more aggressive and submit new specifications and new designs if they be necessary for their customers' needs and at the same time tell them the kind, tensile strength of strapping necessary to give the same or greater protection.

"Inasmuch as there has been a tendency among a few of our members to disregard the technical information which the Association has developed, we have not up to the present time issued direct-mail advertising in which reduced thicknesses and strapping were featured.

"Our members in the Textile centres are meeting with some very active competition in the shape of veneer cases, and we are endeavoring to find some way of successfully meeting this competition. The difference in weight would seem to favor the substitute container and suggests that the 13/16 shook for textiles has outlived its usefulness, but with the facts and specifications as developed from tests made by the Forest Products Laboratory there should be no great difficulty in producing a well balanced box of thinner material to meet this veneer competition. We have discussed this matter at some length with manufacturers of strapping and corrugated fasteners, and are assured of their co-operation through their representatives, who will render assistance to any of our members when called upon. These men have been the means of holding more than one customer to the wood box by their intelligent salesmanship, and the tests by which they have demonstrated the superiority of the resawn-strapped container over the so-called substitute."

Articles dealing with box design and with the use of strapping of various kinds have appeared in different issues of the Canadian Woodworker. A reference to copies on file should bring out much practiced and technical information of this important phase of box work.

Western Mills Endorse Millwork Cost Bureau

Following the spirit of a resolution of the Second Congress of the Western Planing Mill and Woodworking Association, which endorsed the Millwork Cost Bureau and urged its members to affiliate with that organization, 101 Western mills have now joined the Bureau.

H. T. Didesch, Technical Director of the Bureau, who addressed the Western Congress, returned to Chicago recently, after an eleven weeks' tour of the West. During that time Mr. Didesch addressed numerous local associations and conducted classes for estimators in nine cities. They are, Vancouver, B. C.; Victoria, B. C.; Los Angeles, Cal.; San Francisco, Cal.; Everett, Wash.; Seattle, Wash.; Spokane, Wash.; Tacoma, Wash.; Portland, Ore.

All classes were well attended and very spirited and in practically every case a permanent estimators' club was organized for the purpose of continuing the work. The classes will meet weekly and will use the Correspondence Course of the Bureau as the basis of their studies.

Mr. Didesch found the Western operators keenly alive to the benefits of Uniform Cost Accounting and education through co-operative effort. He obtained a considerable number of orders for cost surveys and the installation of the Bureau's Standard Cost Finding System. In one city alone 12 plants will have a Bureau accountant establish their overhead rates and put the cost system into immediate operation. One of the Bureau accountants is at present engaged with that work and another may be sent into the Western territory next spring.

Don't have a motto up, "Safety First," and allow your men to work without effective guards.

Care and Operation of Gang Dovetailer

Repair Bills Often Due to Lack of Knowledge—Care in Adjusting Spindles —Advisable to Pipe Dovetailer to Shavings Exhaust System

The modern gang dovetailing machine has undergone many improvements during recent years, but still it is not fool-proof and probably never will be; that is, not any more so than any other wood-working machine. Certain things can happen to parts of the machine that will cause the operator a great deal of trouble and make extra expense for the management, for repairs and replacements.

The parts most susceptible to damage are not those connected in any way with the powerful hand-clamping apparatus or the hand-operated feedworks; rather, it is those parts associated with the high-speed spindles and their driving mechanism. The spindles run something like 4,500 r.p.m., and every one of them must be aligned and adjusted correctly if it is expected to do good work and continue in satisfactory operation. Every spindle on the machine bears close relationship to its neighbors. No spindle is dependent of its mates in the sense that one spindle of a shaper, sticker, molder or matcher is independent as a unit.

Spindle Adjustment Requires Care

Take, for example, a 15-spindle machine; these 15 spindles are spaced 1-in. apart and mounted in a rectangular open frame or yoke which is held to the machine frame by four bolts, one at each corner. These 15 spindles are arranged in three groups of five spindles each. The central spindle of each group is driven by a spiral gear on one of the three vertical driving spindles, which in turn are driven through bevel pinions on a horizontal counter shaft running 750- r.p.m. Power is transmitted from the central spindle of each five-spindle group to the adjoining spindles (two on each side in this case), by spiral gears. It is the manner in which this row of parallel spindles is driven, as well as the uniformity required in the cuts in the wood, that make the relationship of individual spindles so intimate.

Both ends of each spindle are tapered to fit taper-sleeve bearings of aluminum. The shells of these aluminum sleeves are about ⅛-in. thick. The length of journal at top, where greatest side-pressure comes, is 3⅜-in., while that at the bottom is about 1½-in. The bottom end of each spindle rests on a ring which in turn rides on a row of small ball bearings. This sort of arrangement serves as the end-thrust bearing that supports each spindle. The taper-sleeve bearings fit into steel blocks that bolt to the cast-iron yoke. Each sleeve has a flange at its large end.

Tapered Sleeves to Take up end Play

The fact that each one of these spindles is confined rather closely between tapered bearings, makes it necessary to be very careful with their adjustment. When the spindles are cold there should be not less than 1/64-in. and not more than 1/32-in. end-play in each spindle. This allowance is necessary for the admission of oil and the preservation of an oil film between spindle and bearing, while the machine is in operation. If less allowance is provided and lubricant will be squeezed out of the bearing, and as a result of the heating that is sure to follow, the journal will "seize" its sleeve bearing. Just as soon as the torsional strain of seizure begins, the flange of the aluminum taper sleeve twists off and the sleeve begins to turn in its steel housing. Then comes a call for a new taper-sleeve bearing.

Adjustment of spindles in their lower bearings is made possible by an adjusting screw in the bottom of each lower bearing housing. If a spindle gets too close in the top box and its shoulder is too close to the flange of the sleeve to permit it entering any farther, the remedy is to file off a little metal from the outer end or face of the flange of the tapered bearing. This will let the tapered journal enter farther into its bearing. The bearings will not wear rapidly nor get out of order quickly if they are kept properly adjusted and lubricated. Good oil must be used in the bearings and the oil holes must be kept clean and free of foreign matter, so the oil will really reach the bearings. As is the case with all high-speed bearings, these will go bad very quickly if they are not properly taken care of. Any damage that occurs to a bearing, however, is seldom transmitted to the spindle if corrective measures are taken immediately or reasonably soon, after the bearing goes wrong.

Dust and Chips Frequent Source of Trouble

Another frequent cause of excessive heating in spindle bearings, is the packing of dust and foreign matter between the slender teeth of the fine spiral gears which transmit power from spindle to spindle. This filling-up the gears interferes with their meshing properly and causes side-pressure on the spindles. Naturally this side-pressure causes the bearings to heat, regardless of how much oil is poured into them. The "filling up" of spindle gears also causes other damage; it has a direct effect on the slender gear teeth, causing them to wear down rapidly. Damage due to this is rapidly transmitted from one gear to another, and unless something is done to halt the spread of the damage, all the gears on one group of spindles will be hopelessly ruined in a short time.

When any trouble of this kind appears to be in sight, the thing to do is to stop the machine and clean the gears, and renew those that are slightly damaged, if this seems necessary. It sometimes happens that when an operator detects the approach of trouble of this kind and is on the point of stopping production to correct it in good time, he is urged by a superior to go on a few hours longer to finish a certain job or to defer the necessary corrective measures until quitting time. To postpone the remedy in this manner will often result in damaging the gears or bearings of a group to the extent that they will all have to be renewed. Of course if the work happens to be sufficiently important to warrant such willful destruction of machine parts and the inevitable expense for renewals later, perhaps it is all right.

Why Not Connect With Shavings Exhaust System

To keep dust and chips from the gears, the side-spindle yoke is completely and tightly covered with a flat plate of sheet-metal. This is a fine thing, but if the machine is run without a hood connected to the dust-collecting system, some of the flying dust from the cutting bits is sure to work its way to the oily

gears and begin to pack between the teeth. Some of the fine dust also rises in an almost invisible cloud and causes more or less discomfort to the operator. Few concerns ever think of fitting the gang dovetailing machine with a suitable hood and piping it to the dust-collecting system, but there are many benefits to be derived from the installation of such piping. Any operator who has had an opportunity to work on a gang dovetailed fitted with a dust-collecting hood and pipe, will bear out the truth of this statement. He knows the results of the air suction close to the cutting bits and can appreciate the difference between a machine that has exhaust piping and one that does not have it.

In addition to the sources of gear and bearing trouble just enumerated, there is one that, while it occurs less frequently, is nevertheless a persistent and permanent annoyance. It is the misadjustment or misalignment of the driving and driven spindles. Sometimes it happens that one of the three vertical driving shafts (for a group) and its driven spindle are too close together, too far apart or not exactly parallel. When any such defect exists it usually is very slight, sometimes being so little as to defy detection except when careful tests are made. Owing to the nature of the drive and the high speed of the spindles, such a defect, even when very slight, will give trouble and resist the repairs and replacements from time to time until it is corrected. I have in mind instances where the insertion of a few paper liners to spread apart the driver and driven spindles, was sufficient to stop the regular and rapid wearing down of gears on these spindles.

As for the alignment of an entire set of bits up or down, to bring the series of cuts parallel with the machine bed and at an elevation suited to the sizes of material being machined, this is easily accomplished by loosening the four bolts that hold the spindle yoke to the machine frame, and adjusting the elevating screws. The size of the individual dovetail cut is covered by the size of dovetail bits used. The rounding of the dovetail tenons to make them fit closely and neatly into the dovetail mortises, is governed by setting a die to suit the works. The actual rounding is accomplished by a transverse movement of the carridge, following each advance of material into the cutters.

How Cutters Should be Ground

The narrow counter shaft pulley next to the table frame—drives the small bit grinder. The face of the grinding wheel is dressed to an angle to fit the gullets of dovetail bits. When grinding bits some operators arrange the belt to drive the grinding wheel upward and from, instead of downward and toward them. Bits should be ground barely enough to renew the cutting edge; more grinding is wasteful and shortens the life of the bits. According to the experience and statements of practical men, the bits can be run continuously on sap and gum drawer stock for about 24 hours, with one grinding, and on red gum 35 hours. In furniture work on gum, a set of ¼ or ⅜ in. bits used continuously, will last approximately two years, during which time they will stand being reground 100 times, provided they are ground carefully and sparingly each time. Bits, of course, must be kept sharp or they will tear and chew out the grain of the wood instead of cutting freely.

Guides are provided on each side of the machine to hold the stock in proper position for milling. The proper way to machine drawers is to gauge the cut of all parts from the bottom edge, so that the bottom edge of the assembled drawer will come level and even at all joints. Another point to remember when setting guides, is to take into consideration the width of the material, and then centre the cut in such a manner that neither the top nor bottom edge of any corner joint will expose the mortise and tenon of a dovetail. Every exposed top and bottom edge, when assembled, should show the plain butt joint effect. This applies even to the joints on the backs of drawers in high-class work, but in cheap and some medium-priced furniture, manufacturers and operators seem to pay no attention to it.—The Woodworker, Indianapolis.

You and Your Brain

You and your brain power. How near do you come to making full use of what is in your brain. J. S. Knox, the salesmanship expert, says the average business man uses only about fifteen per cent of his brain power. It may be he puts the percentage high. Certainly few business men do exert their brains to anything like capacity, and a good many scarcely make a start on it. What kind of judgment is it that leads a man with a forty horsepower brain to let thirty-nine of those horses stand at the crib and eat their heads off while the other one does the work that supports the whole forty? You should keep your full brain power working every day. You should give your best, your full thought to each thing about your day's enterprises. Many of your failures have been due to the fact that you did not do the best you knew. You admitted afterward that you knew better. What is the advantage in knowing if you do not make use of the knowledge? The trouble with us is that we don't follow that crisp, one word motto that John H. Patterson, when alive and president of the National Cash Register Company put on cards posted throughout the works—"THINK"! Think this over.

An Original Collection Letter

Here is one that appeals. It is used by a Chicago firm, is perfectly good natured throughout, and is notable for its originality:—

Attached to the letterhead near the salutation is a common PIN, and the letter reads as follows:

"Gentlemen:

"Here's a pin.

"Looks a good deal like any other pin, doesn't it?

"But this isn't an ordinary or garden variety pin. It is a really and truly magic pin.

"It will relieve you of a lot of bother, and us of a lot of worry. It will set you square with us, and help us square up with the other fellow. So be careful and don't lose it.

"Better be sure of it and play safe, for it is the pin you will want to use to attach your cheque to this letter in payment of the statement enclosed.

"Thank you for the cheque. No charge for the smile we hope you get out of this little letter.

Yours expectantly,

"P.S.—Please hurry. We want to use this magic pin on another fellow."

Doubling Up Feed of Planer

Outline of Improvements Which More than Doubled Capacity of Planer Without Impairing Quality of Work—Special Home-made Jointing Attachment a Contributing Factor

By N. W. M.

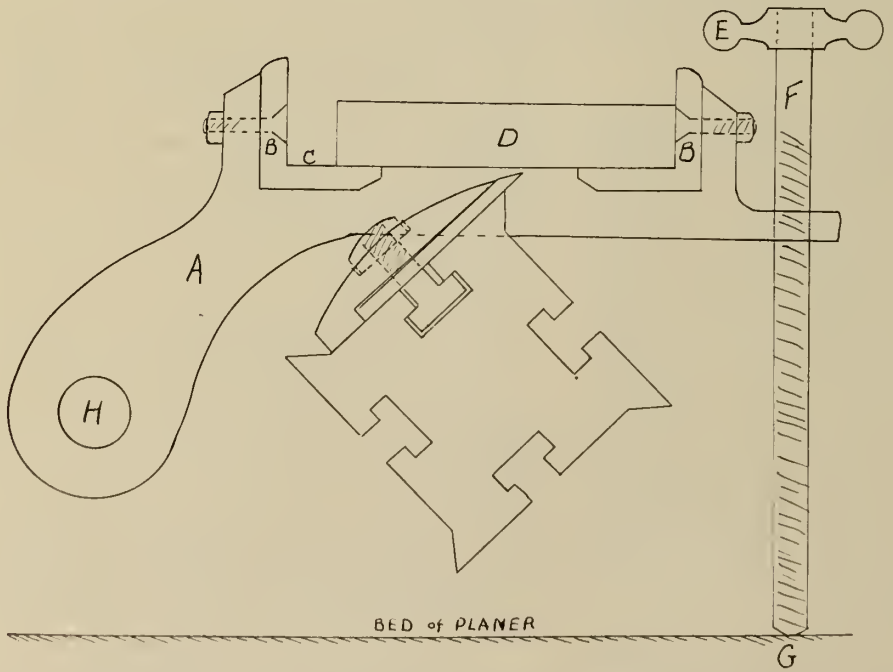
It was my luck some years ago to take charge of a small up-country sawmill then in financial difficulties. This mill had been operated for some time at a loss. Logs were plenty and at a reasonable cost and two railway lines ran through the mill yard, affording convenient shipping of carload lots. The mill was operating up to 75 per cent of its cut on shiplap, 2 x 4 and 2 x 6. The 24 in. x 6 in. four-sided planer, feeding at about 30 feet per minute, had to be run night and day in an endeavor to take care of the mill's cut.

The first thing done was a complete overhaul of the planer, rebabbitting all bearings with best babbitt obtainable. A pair of modern shiplap heads were purchased and fitted to the side spindles. The top cylinder was fitted with four 2 in. x 14 in. thin high speed knives, well backed with suitable caps. An attachment was designed and assembled by which it was possible to satisfactorily joint these new knives. A new set of leather belts was put on, and larger cone pulleys were placed on the counter-shaft driving the feed gear. The speed of the heads was increased from 3,200 r.p.m. to 3,700 r.p.m. The feed speed after the change was 65 and 90 feet per minute. For the side heads to stand up to this feed, more power was applied by placing jack pulleys under the planer quite near the countershaft and having the side belts run up over these pulleys, so that the belt running back from the side head ran practically parallel with the top or forward part of belt. This permitted of the use of a belt 1 in. wider than formerly and gave an even and full belt contact on the small side-head pulley. This, together with the method of hinging and weighing the idler pulleys permitting the maintaining of a constant tension on the side-head belts in all kinds of weather, resulted in the side-heads standing up to the 90 ft. feed without any trouble.

For edging up the 2 in. x 4 in. and the 2 in x 6 in., the four-sided side-heads were each fitted with four 4 in. x 3 in. x 7/16 in. knives faced with high speed steel. As there was little call for double-dressed material, no change was made in the lower head.

When the planer was started up again it ran, depending on the width of the stock, from 20,000 to 25,000 feet per day and stood up to the work. The quality of the work was if anything better than formerly due to the fact that all the knives cutting. Something that would not have resulted if the knives had not been jointed. In fact it was the jointing of the knives that made this high output possible without sacrificing the quality of the planed surface. This output was fully three times greater than formerly. To get more power to carry the extra load involved by the change, the mill engine was speeded up from 160 to 190 revolutions per minute. This was permitted by placing a larger drive pulley on the main shaft. The greatly increased quantity of shavings from the planer when fed into the dutch oven of boiler resulted in the boiler giving more than sufficient steam for all purposes. Thus the power was increased 25 per cent.

The sketch herewith shows the method of making and attaching the jointing from to planer. This consisted of two cast iron brackets, A, (made a pair, right



Showing home-made device by which planer knives were jointed permitting faster feeds

and left) and two pieces of 2 in. x 2 in. x 1/2 in. steel angles, B.B, 28 in. long. These were bolted at the ends to the brackets, A.A, through slotted holes allowing adjustment up and down. The angles were surfaced or planed straight at C, permitting the abrasive block D to slide from side to side parallel with the planer bed. This emery block was 5 in. x 2 1/2 in. x 1 in. and was of about the same grade as a free-cutting emery wheel. To place this jointing frame in the planer the two hinge bolts at, H, holding the shavings hood in position were removed and the hood lifted off and the new attachment put in its place, the same two bolts holding it in its proper position. The bolts H, the wheel E, and threaded rod F, gave the necessary adjustment up or down. The removal of hood, placing of jointing attachment and putting back of hood in position can be all done in about five minute's time.

No doubt many planer men would object to using this block by hand, but to anyone willing to try anything once after the first trial it was as easy as rolling off a log. With lots of money and plenty of power perhaps the placing of a high speed planer might have been considered but in this case neither were available. A planer running 75,000 feet per day in a mill cutting 30,000 feet would be somewhat out of balance.

The practical result of the changes was that the increase in the first week's run paid for the cost of all these improvements, and the plant has since run with a sizable margin on the credit side of the ledger.

Supervision and accident prevention are so closely related that it is impossible to have one without the other. The manager doing his part, the superintendent doing his, and the foreman his, and each co-operating to reduce the awful wastage of human life and limb in industry; and, having reached this pinnacle of determination, they will ever strive to lead those under them so to think and act, that industrial accidents, in so far as their plant is concerned, will be a thing of the past. Real honest supervision can do this and nothing else.

Some More Practical Shop Kinks

Handy Belt Cutting Device—Method by Which Factory Stairs Were Repaired with Cement—Will You Kindly Send in a Practical Idea for Next Issue?

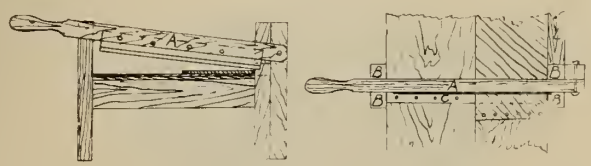
Wood Screw Tap

The woodworker often has to place a wood screw in hardwood, fibre or other substance, where the chances of splitting or bursting assunder are 50/50. When in doubt first bore for the plain or unthreaded portion of the screw. Then take a screw of the size you are going to use and with a hack saw or three cornered file flute the threaded part on two sides somewhat like an iron tap is fluted, then set this fluted screw in the hole or holes and it will cut its own way in without unduly expanding the part. After removal of your home made "Screw tap" you can safely insert the screw or screws in place and set firmly home without danger. Put your "tap screw" away carefully and you will be surprised how often you can use it in delicate work.

Set a screw in a vice and you can cut two flutes in it in about one minute.

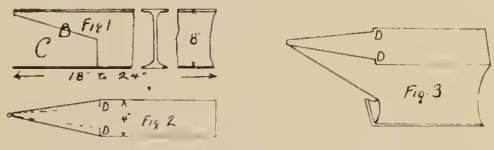
Quick Belt Cutting

In a mill where belts up to 18 in. wide were in use and where all joints were made with lace leather, the quick and accurate squaring and cutting of ends without delay or gathering of tools when mill was down during the belt repair was an important matter. A table roughly 2 ft. x 4 ft. with handles at the ends for quick transportation to any part of mill was built



Using old planer knife to trim belts

by the millwright. Fig. 1 shows part of table with a piece of 8 in. belting in place for cutting. A. is a wood lever working between posts B.B.B.B. This lever has an old discarded 24 in. slotted planer knife bolted on as a cutter. C. is a piece of steel 1/4 in. thick by 2 in. wide screwed to table so that the knife when lowered passes close to its edge. The leaver has a handle at one end and is hinged at the other by a through bolt to one of the B. posts. To cut a belt it is placed against the fence, D. which places it instantly at right angles with the knife. Pressure on



Anvil made from piece of I beam

the lower handle forces the knife through the belts making a quick and accurate cut.

About 40 ft. of lumber, one old knife, 24 carriage bolts, and about five hours' work was the cost of this contrivance and the first time it was used it paid for itself by the time saved repairing the main belt.

Home Made Anvil

Sometimes in the woodworking shop or among a carpenter's tool kit a small anvil will prove a very useful tool. If you are a handy man you can make a useful one for yourself.

Get from your steel supply house an end of 4 x 8, I beam from 18 to 24 inches long. Often these ends are given away. Cut, with a hack saw, Fig. 1 at A. B. The piece C. is thrown away. Fig. 2 shows top view after cutting to shape. Fig. 3 shows how the horn is shaped. Hack saw in at D. D. about one inch and bend down the plate towards the point, the last three or four inches of the horn can be ground to the desired shape on the emery stone. A couple of lag screws and washers will secure this anvil to bench or stout wood block.

Two or three hours will do the work on this job

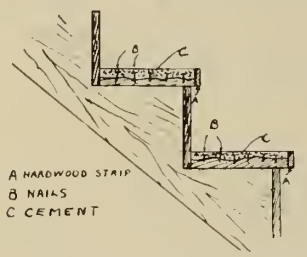
and you will have a very handy appliance at small cost.

Renewing Stair Steps

In a three storey factory the one set of stairs 6 feet wide had become so worn that it was necessary to repair or renew them.

Sometime after the building had been built, by request of the underwriters, these stairs had been walled in with double thick walls to make a fire break. The carpenter had built these walls on top of the steps making it difficult to remove and replace them. A hardwood nosing was nailed on the outer edge of the old steps as shown in fig. 1. This nosing stood up 3/4 of an inch above the original surface of the steps. Heavy clout nails with large heads were then driven three parts of their length into the old steps. These nails were scattered each way roughly about hard wood nosing forming anchors to hold the cement when laid on the steps.

Equal parts of cement and clean sharp sand was mixed to a good thick batter and laid on the steps with a mortar trowel. As the steps were in constant



Showing how steps were built up with cement

use they were divided in the centre with a strip of wood, and one half of the stairs were covered from top to bottom with the cement. After three days the centre strip was removed and the balance of uncovered step was coated to the level of the nosing. Later a thin finishing coat was laid on over all the surface. This was laid on Saturday afternoon while the shop was down. Monday morning the surface was dry and ready for use. The shops handy men did the work. Use of the stairs was not interfered with in working hours, and after a year's use the cement surfaces shows little signs of wear.

This cement job cost about one-third as much as the renewal of steps with wood. In this case the carpenter's blunder was considerable of an economy.

Putting Lizzie to Work

Having a quantity of small wood turnings that required smoothing and polishing, a small oak cask was mounted on a rough frame with a shaft through its centre to be revolved by a wood crank. An opening had been cut in the side of the cask about 6 x 12 inches. This was hinged and fastened as a door to allow the turnings to be placed in the cask. The handle of the crank was wrapped with an old inner tube. A ford runabout was jacked up on one side, its axel lined up with the axel of the cask and the crank handle placed between the spokes of the wheel. The cask was loaded to about two-thirds of its capacity and was revolved by the Ford for one hour at a speed of thirty revolutions per minute. The contents were then sampled and proved very satisfactory. The constant rubbing of the turnings with each other, together with the friction of a quantity of large wood saw dust, put a fine polish on them. About a dozen cask loads were run through and the outfit stored away for further use.

Larger turnings, or even small metal castings could be polished by the same rig.

Furniture for the Craftsman

An interesting book has recently been published by the U. P. C. Book Company, Incorporated, 239 West 39th Street, New York, under the title "Furniture for the Craftsman." This work is in reality a manual for the student mechanic. It covers the designing, construction, and finishing of a large number of articles used in and about the home. In many instances not only is the design shown, but construction details and dimensions are included. The thoroughness with which the subject is covered may be judged from the list of chapter headings as follows: Influence of Antique Models on Present Day Furniture, Essential Tools and Equipment—Ornament on Furniture, Certain Furniture Forms—Value of Spare Time and Observation, Tables and Stands, Stools and Other Useful Furniture, Furniture for the Hall, Sitting Room Furniture, Furniture for the Parlor, The Dining Room, Bedroom Furniture and Conveniences, Bathroom Accessories, Certain Kitchen Accessories, Bookcases and Holders, Furnishings for the Porch and Grounds, Finishing, Upholstery, Drawing.

Eastern Woodworker Anticipates Good Demand

According to one of our eastern readers the woodworking business in the Maritime Province was not any too good during the past season. "Our own local permits for the City of St. John for the month of November were just one half what they were this time last year, in spite of the very mild fall which we have been having. The general trend of business has kept up very well during the fall but this last week or ten days it has fallen off considerably and we look for a very quiet winter, but the most of us are optimistic for the coming season, There seems to be a number of prospects in view at the present time and we cannot see why we should not have a good year. The demand across the border for carpenters this year has been so great that the majority of our best men have gone over there to work and at the present time it is very hard to get good men. We have also had to pay what men we have been able to hold larger wages than our business would really warrant. Owing to the small amount of business offering there has been a good deal of price cutting and in this way what business we have done, or any other factory has done, will hardly pull us through with a profit. This makes the writer feel more and more every day that we manufacturers in the maritime provinces should form a retail lumber association, such as they have in Ontario. The only way to get business will be to give the customers service and delivery.

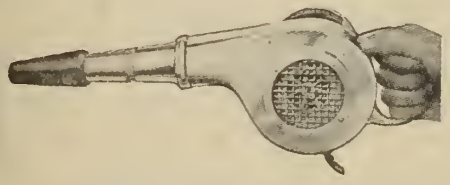
The man who is prepared for tomorrow is the one who got ready today.

A "tire" in a band saw is that part which is left straight; it is shorter than the rest of the saw which has been tensioned.

Machinery & Equipment

Portable Electric Blower

A light, portable electric blower for cleaning around the shop and keeping the equipment free from dust and shavings is being offered the Canadian trade by the Clements Manufacturing Co., Limited, Duchess Street, Toronto. As will be seen from the accompanying illustration, this takes the form of a light hand blower that may be attached to any lamp socket. In some plants leads are taken off the main air line and by means of a hose and nozzle an attempt is made to clean certain of the machines. This method does not work out very satisfactorily for unless the air is carried to all sections of the plant it is limited in its scope. Another feature is that using compressed air for cleaning there is a certain amount of condensation which sometimes gives some trouble. With the portable electric blower these disadvantages are overcome, for the blower may be used wherever a light socket is available. It is extremely desirable that all equipment be kept clean and free from dust and shavings. This tends to, not only increase the life of the machines and keep down the repair bill, but also reduces the fire risk and makes for better working conditions in general. A descriptive folder and other particulars relative to the Cadillac Electric Blower may be had by writing the manufacturers.



Cadillac portable electric blower

A New Double Surfacer

A new double surfacer embodying a number of unusual features is being placed on the market by the Oliver Machinery Company, Grand Rapids, Mich. This is the first double surfacer to be built by this company, which left them free to develop a design embodying ideas based on their long experience in the production of wood tools. While the accompanying illustrations show the machine with motors attached, it may also be had for belt drive. One new feature worthy of mention is that the Alemite system of grease lubrication is used throughout. This insures a forced yet easy lubrication of all parts. Another departure is the size of the cylinders. These are eight inches in diameter and are fitted with six high speed knives. The result is, that owing to this large diameter, the cut is more nearly a straight line one, eliminating to a certain extent the wavy knife marks sometimes seen on work produced with a smaller cylinder. Further, owing to the large diameter of the cylinder heads and to the fact that six cuts are made per revolution, a smooth finish is secured with a comparatively low cutter head speed. The Cylinders of this machine are designed to run at 3,600 r.p.m. The cylinder journals in self-aligning ball bearings. Provision is made for grinding and jointing the knives without removing them from the heads. In the case of the bottom cylinder, the cylinder and yoke may be pulled out on a self-contained bracket which gives ready access to the knives for grinding and jointing. The upper in-feed rolls and the chip breakers are sectional thus insuring accurate work on narrow stock when fed side by side. The planer is built in two sizes, 30 and 36 inch and will accommodate stock up to 8 inches in thickness. Four feed speeds are provided, 24 ft., 46 ft., 72 ft., and 108 ft. The bed may be raised or lowered by power, and a safety device has been provided which automatically releases the mechanism in the event that the operator fails to stop the feed before the bed reaches the top. Another point worthy of mention is the way in which all moving parts are covered and guarded. Not only does this add to the safety of the operator, but it tends to improve the appearance of this double surfacer.

Two views of double surfacer recently placed on the market by the Oliver Machinery Company

From Missouri?

WALNUT

We will not tire you with a long article on the merits of our Veneers.

All Ads read just about alike—stressing **sourse of supply, quality of product, complete stocks, prompt shipments, c o u r t e s y of service, etc.**

We, too, could say all that and then some, but we won't.

Talk's cheap. We've got the goods.

WALNUT

STUMPS

BACK CUT

HALF-ROUND

ROTARY

SLICED

WALNUT

Let Us Show You

GEO. W. HARTZELL, PIQUA, O.

WALNUT SPECIALISTS

Upholstering and Trimming

Interesting Meet at West Baden

Upholstered Furniture Manufacturers Discuss Many Questions of Vital Interest

The semi-annual convention of the National Association of Upholtered Furniture Manufacturers, held at West Baden, Ind., October 23, 24 and 25, was unusually successful. An interesting and practical program, a good attendance, and an unusual interest in the discussions demonstrated that this convention was more than a meeting of competitors—that it was a congress convening for the good of the entire industry.

All of the reports showed that the association is in a very prosperous condition, financially as well as from the viewpoint of the interest of the members in its many activities, and that the possession of membership in the organization is becoming increasingly valuable to the manufacturers. The technical research work in the headquarters of the association in Chicago, the aggressiveness of the commerce department in handling traffic problems, the policy of the association in aligning itself with every forward movement in the furniture industry, were all brought to the attention of the members and revealed a period of intense activity by all concerned during the six months intervening since the last association meeting.

Executive Secretary Ralph F. Windoes made an interesting report. His report proved that the past six months have been very busy months for the association, the volume of requests for information and assistance along a great variety of lines having shown a constant increase. These requests not only showed a material increase from members but also from dealers and the consuming public which indicated a greater interest by these two important classes in the work of the association.

Laboratory Had Been Established

In order to answer the different questions coming from all parts of the country, Mr. Windoes said that a laboratory had been set up in the association office in which experiments have been made which is hoped will be of real value to the industry. He told of the work of the association headquarters in taking care of various requests from members for information, of the different committee meetings and conventions of related industries and of the co-operation so cheerfully given by the members in weeks gone by that demonstrates the unselfishness with which they are working for the good of the industry.

"An association," he said in conclusion, "is not a one-man business—it is the business of every man in it and I am sure I am speaking for President Schnadig as well as for myself when I say that the wonderful spirit of co-operation shown in this association is responsible or the smoothly running machine that it is."

A code of ethics which had been submitted to the executive committee was read to the members but action on its adoption was postponed until the meeting next April. Messrs. L. L. Valentine, William Sultan and H. W. Mallen were appointed a committee to give further consideration to some of the items of the code.

The National Retail Furniture Dealers' Association had requested the association to standardize furniture catalogues. The members who spoke on this request expressed the opinion that the size of the catalogues issued is a matter for the individual manufacturers to decide and that there is so much artistry, so much individual taste involved in the publication of catalogues, that standardization of them would not work out satisfactorily. It was suggested that members put their names to the edges of the catalogues, when the catalogues are large enough to make it practical.

Mr. C. S. Bather, Commerce Counsel, made a report which proved that his department had been kept on the jump since last April combatting efforts of the carriers to increase the freight rates on furniture. Furniture now pays more per ton mile and more per car mile than any other commodity, except machinery, and yet the railroads whenever they seek means of raising more revenue always pick on furniture first.

In discussing "The Business Outlook for 1924," Mr. D. D. Fennell said he was a "bull" on prospects but that there were some things manufacturers should pay strict attention to in order to insure a prosperous condition. Chief among these was the necessity of securing sufficient "sales coverage." "One of the difficulties in the furniture industry is a lack of sales coverage or elasticity in orders so that production will be more uniform," he said. "Business really goes up and down, according to the sales ability of the manufacturers. Extraneous conditions really have very little effect," he said. More intensive cultivation of sales territory would, in the opinion of Mr. Fennell, help insure sufficient sales coverage.

Next year, while basic conditions will be good, Mr. Fennell expressed the opinion that manufacturers will have to work for business and that the best means of insuring uniform production is by so regulating sales effort that a steady flow of orders to the factories will result. He expressed the belief that there will be no sudden drop next year but that manufacturers should insure themselves by arranging for necessary sales and advertising coverage for their products.

Mr. Adolph Karpen followed Mr. Fennell with a strong address in which he expressed optimism for the furniture industry for the immediate future as well as for many years to come. He said the outlook was never so good, so brilliant as today, and he concluded by asking the association to support the Ameri-

can Homes Bureau which is devoted to reselling the American home to the American people.

The address of Mr. Karpen struck a responsive chord among the members, for immediately after he concluded, the association passed a resolution endorsing the work of the American Homes Bureau in all its activities and particularly its work of publishing a reference directory which will be distributed to 21,000 dealers. By a standing vote, every member at the meeting put himself on record as approving the reference directory of the American Homes Bureau and requesting the Bureau to send a field representative to call upon them regarding advertising in the reference directory.

At the afternoon session, Professor David Himmelblau, of Northwestern University, delivered an address on "How to Analyze Your Own Financial Statement." Professor Himmelblau said that as industry had grown from a one-man business to a business requiring an organization, that the manufacturer who attempted to keep his financial statement in his mind, was headed for disaster. Manufacturers should have financial statements of their business at least once a year, he aid, and if that is necessary ,why not analyze it?

Professor Himmelblau analyzed the balance sheet and showed by figures on a blackboard how essential it was to consider the ratio of current assets to liabilities in order to form the proper and accurate idea of a firm's working capital. In this connection, he spoke of the advisability of having monthly financial statements so that any change in the ratio would be brought to the attention of the executive in time for him to give the matter the necessary executive attention and if possible take such measures as would bring the business into the right channels.

In discussing the profit sheet, Professor Himmelblau said that as the furniture industry did not have any fixed unit of value, such as the coal and other industries, it was necessary to use percentage figures in order to get the relationship between gross and net profit. He analyzed merchandise turnover and plant investment, etc., and by figures laid down principles by which manufacturers can get a firmer grip and insight into their business in time to warn them of any condition requiring executive action.

Adoption of standards to govern what shall go into furniture was the last topic discussed. Mr. Karpen said the members should insist that the material used inside and out, be new, sanitary and as represented. President Schnadig said that members should be very careful of their source of supply and be on the lookout for any inferior or shoddy goods.

Davenport Makers Enjoying Good Trade

"The message of the Davenport Bed Makers of America is carried into 6,700,000 homes in the 3,900 counties of the 48 states of the Union every month. If all of these homes were placed on fifty-foot lots, they would make four streets, each 2,940 miles long, or approximately the distance from New York to San Francisco. If a salesman attempted to talk to as many people who are now reached by this advertising campaign, it would take him over 650 years, speaking every night in the ordinary sized opera house."

Mr. Frank J. Seng, who presided at the meeting, read the tabulations of a questionnaire sent to Davenport Bed Makers regarding business, shipments, volume of orders, prospects, etc. The answers showed that manufacturers generally were enjoying a good trade. Mr. Seng said the advertising campaign must have had a very material effect in bringing about this desirable condition. The shipments of Davenport Beds so far this year are one-third in excess of shipments during the corresponding period of last year. The statistics indicated that there was an increase in the sale of long Davenports.

Randolph Branner, who is in charge of the advertising campaign, in his talk said there were some things in the campaign that were the responsibility of the manufacturers. Among these were the manufacturers' responsibilities for his salesmen tying up with the campaign, the manufacturers' duty of taking advantage of everything the campaign offers and the necessity of manufacturers acting on every bit of information of value developed by the advertising campaign.

The farm woman is taking growing interest in the Davenport due to the fact that it offers her some relief from the work and drudgery with which she is beset on all sides. The market for Davenports in farming communities is greater than first expected and mediums for reaching the farms are being increasingly employed, Mr. Branner said. He also stated that the response from the hotels was very remarkable and that interest from the market is quickening. Mr. Branner spoke of the various dealer helps which are helping the campaign and he too emphasized the importance of salesmen co-operating with the advertising forces.

Relation of Architect to Millman

(Continued from page 52)

every group in the industry, depending on the competitive method for the bulk of their business, did otherwise, and each do what he urges—charge 1 per cent. for estimating from lists and 2 per cent. from blueprints? I fear the dear public would raise an even louder uproar and spring the builders' strike as they are doing now, we are told, in certain centers of the East.

It all strikes at one of the abuses of the competitive system, however—one in which he who makes a mistake gives the public something for nothing; but is not the only answer a real quantity survey system, supported financially either by the entire industry or by the public directly, as done in England?

No, you in the mill game cannot solve all your troubles without helping all the rest of us in the game to solve ours. Needed reforms cannot all be made without the strength of a united front, and until "functional consciousness" is inculcated in the entire game—a consciousness that recognizes the rights and functions of each group. It takes a stabilized building industry—one in which the public has full confidence—before either the millman or the architect will come to his own.

Architects' Small House Service Bureau

And, speaking of "functional consciousness"—some mills feel it necessary to make plans. Granted, the architects would get but little of that class of work, anyway—it still is true that by so doing the public is led to belittle the architect's function. To such mills, may I suggest the Architects' Small House Service Bureau. As good plans and specifications and, if you please, quantity surveys, as can be made, are furnished through this bureau at from $15

to $25 per house. The bureau is endorsed by the American Institute of Architects and needs your support. Its success will strengthen the legitimate architect and his important functions. It deserves your support morally and financially. It is an altruistic, non-profit-making organization, and through its several bureaus has already issued plan books of real value to the localities they are designed for.

Confidence in Architect Is Growing

The architect is the professional element in the industry. The public is coming to have more confidence in the architect as he measures up by training and service. Through him much can be done in educating the public to accepting right practices. Help us architects to enforce our license laws. Would that the mills were strong enough to refuse to figure from incomplete or tricky plans! Would that abuses would always, as they should be, be reported to license boards, or to such associations of the industry as are organized in New York, Boston, Philadelphia, Seattle, Portland and other localities, in the congress movement about which I want to speak in closing.

The architect, being the professional element in the industry, and as such, often an adjucator—an interpreter of contractural relations—should be of unquestioned integrity. He must be fair to both the owner and the contractor or other party to the contract. He cannot maintain a high standard of practice without the full backing of the industry as a whole. The architect's training is especially in design and construction theory. Both branches are man-size jobs in themselves. Technical information from such fact-finding investigating bodies as yours would be of great assistance in standardizing methods of presentation, specifications and practices of competitive bids. In turn, the architect and the industry in general should expect from the mills real service and honest business practices.

Export Inquiries

Furniture.—A firm want quotations on pianos, chairs, furniture; in quantities of six each. No. 3311.

Furniture.—A firm wish to buy office furniture and ironware for office chairs—swivels, etc. No. 3312.

Furniture Accessories. — Catalogues wanted by firm of cottage furniture; also samples of asbestos in short fibres to mix with cement and stains for flooring; flooring without joins and stepped in asbestos fluid. No. 3314.

Pianos, Gramophones.—A Bayonne firm want to obtain prices on pianos and phonographs; also agency conditions. No. 3315.

Wood, Tool Handles.—A Grenoble firm want direct quotations for ashwood logs, Havre or Bordeaux; also tool handles. No. 3331.

Dowles.—A Wigan firm inquire for birch dowles for furniture trade, ¼-inch, ⅜-inch, ½-inch. Can take about 5,000 sticks at times. Prices c.i.f. Liverpool in British currency. No. 3336.

Phonographs.—A firm in Amsterdam would like to hear from Canadian firms in a position to export phonographs; catalogues, price lists, etc. No. 3367.

Handles.—A Bristol merchant house desire quotations for 4-foot 6-inch manure fork handles, both bent and straight; 4-foot to 8-foot hay fork handles, and broom handles approximately 4-foot length, to be used in the manufacture of brushes. Also quotations for hickory hammer, sledge, hatchet and pickaxe handles desired. No. 3452.

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TRADE MARK
SPRING COMPANY

Quality Spring Goods

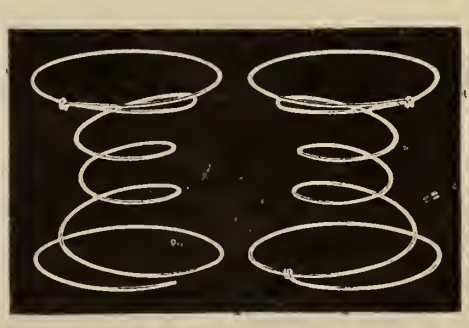
for the Manufacturer and Upholsterer

Fischman Ventilated Spring Mattress.
Fischman Ventilated Box Spring.
Fischman Ventilated Combined Box Spring and Mattress.
Fischman Ventilated Spring Pillows.
Fischman Spring Upholstering Cushions.
Fischman Upholstering Constructions.
Fischman Spring Rosettes.
Fischman Ventilated Chair Pads, Etc., Etc.

Fischman products enjoy an enviable reputation for consistent high quality in all lines. They are the choice of manufacturers and upholsterers who take pride in the superior construction of their furniture. Get our prices.

Fischman Spring Co.
KITCHENER — ONT.

"IDEAL"
FURNITURE and UPHOLSTERY
SPRINGS



Double or single cone, plain or knotted ends, in any height, shape or gauge of wire.

All "Ideal" Springs are made of "Premier" Brand—the best steel spring wire obtainable. Before shipping, the springs are japanned and heat-treated, giving an enamel finish and making the spring more resilient.

Catalogue and prices on application.

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of Canada, Limited
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Finishing Room Materials

Turpentine
Sandpaper
Rotten Stone
Pumice Stone
Chamois
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The manufacturer who makes the article is helpless without the merchant who makes the market

Reach your market through "Canadian Woodworker"

MARIETTA WOOD AND METAL FINISH SPECIALISTS

Practical - Economical Permanent

Maco non-fading stain has all the advantages of a good water stain and has eliminated many of the disadvantages. It can be used on the finest mahogany or walnut or on the cheapest close-grained woods.

Let us tell you more about it.

Ask us about Marietta Enamels and Varnishes.

The Marietta Paint & Color Co.

General Office and Factory, Marietta, Ohio
Southern Office and Factory: High Point, N.C.

A Better FINISH

You can improve the appearance and durability of your finishes and increase the saleability of your furniture by using

Cosmos High Grade Lacquers and Lacquer Enamels

Lacquer gives a permanent, waterproof surface that is tough and durable.

It dries rapidly, increasing the output of the finishing department. Successive coats may be applied at half-hour intervals, enabling work to be finished in one day.

Samples, prices and other particulars gladly furnished.

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WOOD LACQUERS
ENAMELS
BRONZING LIQUIDS
EUREKA AIR BRUSHES
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REFINED FUSEL OIL
COLLODION
BRONZE POWDERS
MATCHLESS METAL POLISHES AND BUFFING COMPOSITIONS
BANANA OIL

Cosmos Chemical Company
Port Hope Ontario

THE FINISHING ROOM

Notes on Wood Finishing

Suggestions Pertaining to Various Phases of Finishing as Encountered in Different Plants

By A. Ashmun Kelly

Properly finished, imitation mahogany on birch gives a very handsome job, some say a better effect than the real wood. If the birch is plain, showing indistinct figure, better fill it with a dark-stained filler, which will show up the pores better and give the figure a better appearance. Some finishers do not fill mahoganized birch, but apply two coats of shellac, the first coat very heavy, it being rubbed well into the wood. The result is not very satisfactory, for it gives a surface that does not show up the beauty of the wood, giving instead a dull, lifeless effect. The wood must be paste-filled, and for the finest job first apply a very thin coat of shellac and then sandpaper it before filling. Birch veneer must be sponged and sandpapered in the woodworking shop, and when it comes to the finishing room, stain it, a little lighter color than the finish is to be. The grain should then be lightly sandpapered off, followed by a coat of stain finish. To sandpaper the fuzz from wood that has been stained use a sharp sand paper. There is a knack in sanding off the raised grain. Birch that has been water-stained should be paste filled, to prevent pinholing. The filler should be used thinner than for porous woods. After the filling has dred proceed in the usual manner and according to nature of finish desired.

Treatment for Red Cedar

To get a high polish on red cedar chests the process is as follows: Apply a coat of hot linseed oil; let it stand for 24 hours; then apply a coat of shellac varnish, white or orange, being governed by the depth of color desired in the finish. Let the shellac become dry, then give it a coat of varnish. First, however, sandpaper the shellac until smooth, using a very fine sandpaper. For a better finish apply a second coat of shellac. When this is dry rub with fine flour pumicestone and water until quite smooth. After 24 hours rub with rottenstone powder and water. Then in a few hours finish by polishing in the usual manner.

To finish birdseye maple see first that all streaks are removed by bleaching, and if any of the eyes have fallen out fill the cavities with a putty made from fine maple sawdust and glue size. This putty must then be given time to become hard-dry. Should any holes show themselves after you have started to shellac, use shellac in place of glue with the sawdust. White shellac or glue is best. No oil should ever be used on maple wood. Use white shellac for the coating, but the finish coat should be a light copal varnish. Maple does not require much varnish to give its best effect. Too many coats of oil varnish, even the palest copal, will impart a reddish color to the wood that is not desired where the finish is to be natural. Even when it is to be rubbed to a finish there need not be much varnish used, or no more than sufficient to allow rubbing without cutting through. Rub with oil and flour pumicestone. If the finish is to be a polish, then rather more varnish should be applied.

Working Curly Grained Wood

Years ago the curly woods used in cabinet or furniture work were few, such as walnut, mahogany, maple and ash; now we have in addition such woods as beech, sycamore, birch, gum, pine, magnolia, gum and poplar. Yes, even fir, and there may be a few others that I have not listed. The lighter-colored woods, such as magnolia, poplar and gum, are always stained to get the effects given by certain other woods. Maple is not stained as a rule, as its natural beauty of color and figure, as shown when shellacked and varnished, is generally desired. True, it has been stained a light gray, and with good effect, too. Beech, sycamore and birch are stained to get the mahogany effect. This high coloring has also been given to pale woods like poplar. Now we admire the brown effects, rather than the reddish; walnut stains are preferred. The rule should be to finish curly wood so as to bring out its natural markings and color; stains serve rather to hide these features.

The Southern yellow pine and the Oregon pine give fine curly effects, with a very fine color, and such woods require very little stain to emphasize their beauty. As for oaks, walnut and mahogany, they have color enough, and need no stain.

In such woods as birch, beech, and sycamore, and we may add also poplar and magnolia, really a kindred line, there might be more done towards developing their natural color and design of growth formation. In brief, there is hardly a wood of the forest that does not have some distinct feature that is well worth developing.

Toning-down Circassian walnut

The strong contrasting figures of Circassian walnut can be toned down with light walnut stain. It will not destroy the fine markings nor darken the color too much, only the very light parts being affected by the stain. First apply some stain to such parts, and when dry go over the whole surface with the stain. This gives a uniform coloring, doing away with the objectionable too-prominent effects. The water stain may be made from brown walnut powder or walnut crystals. When dry, sandpaper lightly, using a very fine sandpaper.

Practically all mahogany is stained, some of it being so stained as to render it indistinguishable, and only showing its true nature by its peculiar figure and grain. It is sometimes darkened to the natural color of black walnut, and we have met with it disguised with a green stain. It should be said, however, such colors have run as short-lived fads only. Usually mahogany is stained to bring out its natural beauty that is its own through long lapse of time.

Mahogany, when first sawed, and even when it gets to the cabinet shop, is a very pale-colored wood, and stain greatly enriches it and adds to its attractiveness generally. But the stain should be reddish, not brown nor green.

Temperatures to Use in Drying

Can varnish be baked on furniture? The question has been asked me. I did not know, but looked around and found that the present status of the varnish industry did not admit of baking of varnishes on the general run of wood furniture above 120 deg., Fahr., and that only where the humidity is controlled automatically. In tests made to determine what saving could be made in baking varnishes for aeroplanes it was found that from five to six hours, at 110 deg. Fahr., was the highest temperature and shortest time that could be used for varnishes that met the government specifications. With a short-oil varnish the time might be shortened, but the temperature could not be increased.

The waxes employed in making furniture polishes, as well as for floor waxing, are white and yellow beeswax; Carnauba, from Brazil, a hard, brittle, grayish-colored wax, melting at from 180 to 185 deg. Fahr. It is used with ceresin or beeswax for making floor wax. Ceresin is the refined form of Ozokerite or mineral wax, and comes in white and yellow. It resembles paraffin wax to some extent, but is less scaly. It has taken the place of both beeswax and paraffin very largely. Its melting point is approximately that of beeswax, about 135 to 140 deg. Fahr. French artificial wax may be made upon this formula: Melt together 100 parts of paraffin wax, 50 parts of clear pale rosin, and 1 part of Carnauba wax. Then mix 5 parts of talc and enough yellow aniline or powdered curcuma to give it the yellow beeswax color. Stir occasionally until cold.

To harden the varnish finish on table tops the German method is to add a small amount of alcohol to the varnish; this hardens it, but does not impair its elasticity. But it does dim the luster some, though it passes away in a little time.

To give artificial age to mahogany use a weak bichromate solution, or employ the fuming process. Weak lime water will antique the wood, giving it a reddish coat. Or the effect may be obtained by a mixture of two parts of turpentine and one part of linseed oil, well rubbed into the wood, after which rub dry. Then give it a weak bichromate solution. When dry fill with mahogany paste filler. Finish as desired, shellac or varnish.

New Solvent Discovered

Isopropanol, a liquid which may be obtained from natural gas os as a by-product in the refining of petroleum, is heralded as a substitute for alcohol as a solvent in medical and pharmaceutical preparations by H. C. Fuller, consulting chemist of the Institute of Industrial Research here. It may be produced cheaper than alcohol, he states, and it has, so far as has been ascertained, no bad effect upon the human organism when taken internally or applied to the skin.

Isopropanol is a colorless liquid, with only a slight odor when pure, and with a boiling point of from 81 to 83 degrees centigrade, or a little above that of alcohol. Chemically, it also is a member of the alcohol family to which ethyl alcohol belongs, but unlike it it cannot be made by any known method of fermentation. It mixes with water in all proportions and freely dissolves volatile oils, resins, many inorganic bodies and a large number of organic compounds. In general it may be said to parallel ethyl alcohol as a solvent.

Finishing Crotch Veneer

The difficulties encounteed in finishing crotch veneers are such that we must correct the laying as well as finishing operations before we can hope to overcome the difficulties which are so often experienced.

With crotch veneer the first essential seems to be the drying. The most successful operators dry the veneer months ahead and then store it away carefully. then just before laying it, it is again put through the drying process, so that any moisture that may have been absorbed is thoroughly eliminated. It is then laid, using the best glue. The edges of the pieces are carefully glued also. Particular stress is laid upon this part of the procedure. At one time many resorted to the use of cheese cloth on the back, which would have a tendency to hold the veneers together and to help make a sort of binder, but this has been generally discarded because it was found that it only added additional surface to absorb and retain the moisture of the glue.

The glue should be thin enough so as to penetrate, but still have the strength that is required of a good veneer glue. Lately, there has appeared on the market a new adhesive known as casein cold glue. This is a water proof glue, one that is used cold and has on account of its waterproof qualities, an effect on the veneer layer, because in a subsequent staining operation it withtstands the water stain. After the veneers are carefully laid they should be given an extra amount of time for drying. It might be said that the time should not be shortened in any operation where crotch veneer is used, so as to assure the proper drying and setting of every material that is used in the finishing room.

The old idea of oiling the work, so as to put life into the wood is not necessary, as the filling operation will do this work at a more proper time. After the veneers are prepared for staining the stain should be strong enough so that one application will do and this to be wiped off with a rag, in order to get the color to the wood with the least amount of absorption. This stain should be hot in order that it may dry quickly. The wood should then be sanded and filled with rich filler, by which I mean one to which sufficient oil has been added so that it can be rubbed about without drying too quickly. Let the filling coat dry for two days, then coat it with elastic varnish. Be sure that no shellac enters into the operation. After the first coat of varnish is thoroughly dry add another coat without sanding the first. When second coat is dry sand thoroughly and add the third coat. This is to be rubbed in the usual manner.

Laying Out the Finishing Room

Very often the finishing room of our furniture and piano factories get very little attention. Why this is so I cannot conceive. Is it not true that this department is a very important one and is worthy of every consideration. The cost of finishing is not only a

"Perfecting Wood Finishes"

Under the above title, we have recently issued a descriptive booklet in regard "The Armor-Plate Finish" for furniture, known as Dupont Viscolac.

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large item in the cost of production but the reputation of the goods and the maker depends largely on the finish. In factories of more than one storey we usually find the finishing room on the top flat.. It is better in this way for handling the work in process, also it removes the work away as far as possible from the dust of the other departments. While the top flat has many advantages over other parts of a building, it also has a few disadvantages and plans should be made to overcome them.

The accumulation of gases of the different departments below the finishing room finally reaches the top floor and the fact that nearly all the material used in finishing generates a large quantity of gas, provisions should be made for carrying it away by placing ventilators in the roof at regular intervals especially where filling and staining or shading or similar operations are done. Do not be afraid to have the ventilators large enough. There is nothing so essential as lots of fresh air. It is better for the work in process and much better for the men preparing the work.

While we are considering the gases that rise from the floors below, let us not overlook that much of those given off by the process of finishing follow along the floor, seeking the lowest level. Naphtha, benzole and kindred hydrocarbon compounds in the act of evaporation produce gaseous compounds that are heavier than the air and of course will sink to the lowest level. This should be very carefully considered where naphtha is used in large quantities. It is dangerous, as in the case where the boiler room is in the basement. The fumes might follow the floor down the elevator shaft with dangerous results. The ventilation should have a ceiling and floor exhaust. In this way the floor would have an outward exhaust.

In locating the different operations it is important to have the work go from one process to the other with as little handling as possible. When the goods to be finished come off the elevator they should be properly dusted and stained and filled, or filled and stained as the case may be, then moved on to the shading, then to the shellacing, sanding and on to the varnish room with as little hand handling as possible.

The rubbing room should be located as near the varnish room as possible. A splendid arrangement is to have a room between the varnish room and rubbing room to store the stock for a few days or as long as can be allowed to harden before rubbing, then on to the stock room. This department should be of the same temperature, or as near as possible, as the other departments, also this room should be kept dark. A good thing to do is to make a test once in a while as to temperature and humidity.

Plenty of good light is a great essential to a finishing room. Do not have the windows frosted or put in corrugated glass as a great many factories are doing. It makes a room too much like a jail and spoils the light. Further a stone thrown from outside will break one of these panes as easily as any other kind, and most of the windows are broken in that way. A great deal more can be said about the layout of the finishing room and I will have something more to say in a later issue.

Christmas and New Years Greetings

To Canadian Woodworkers and Furniture Manufacturers

We take pleasure in thanking you for your courtesies of the past year, and wishing you abundant Health, Prosperity and Happiness through the New Year

International Varnish Co. Limited

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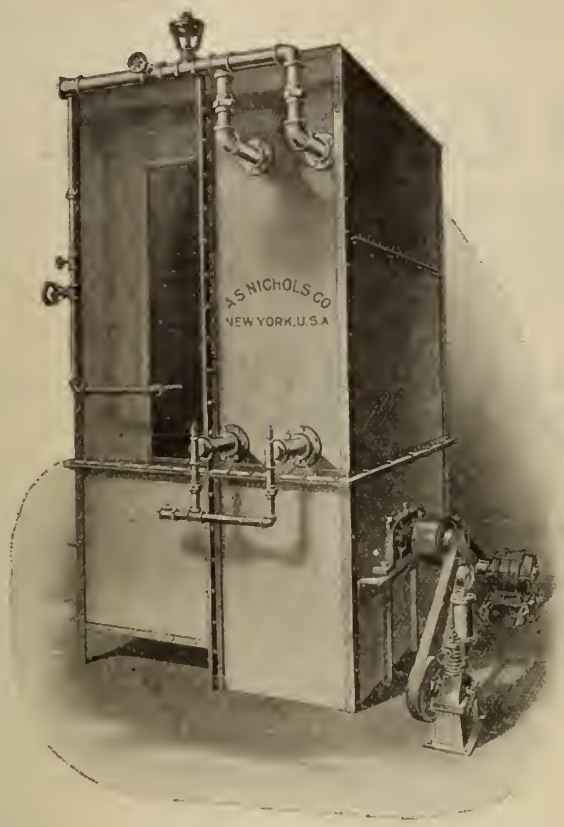

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- —Labor turn-over increasing
- —Bad working conditions
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Veneers and Panels

Does Responsibility Rest With Owner?

Methods and Equipment in Veneer Department in Various Plants Analysed

By A. W. Williams

We sometimes hear criticisms of material appearing in trade papers on the ground that it is "old stuff." Anyone whose work takes him into numerous veneer rooms in various parts of the country would be surprised to note how much old stuff is present in these plants. By old stuff here I mean obsolete equipment. If the amount of equipment in use that ought to be junked could be realized by the real live veneer man the necessity for continuous harping on certain subjects could be appreciated by him.

Some plants are slack on parts of the work that others watch very carefully, and vice versa. My observations have been, however, that men follow the lead of the owners or executives of the business. If these heads are slack, the men in the plant will be slack. This shows up with considerable force in a plant where the equipment is obsolete. If the owner will not take enough interest in his plant to see that his machine equipment is kept up-to-date it will almost invariably be found that the men are careless, and, how could it be otherwise?

Good Equipment Means More Than Output

Poor equipment will take the heart out of a good workman. If you don't believe it just make a few observations for yourself. If a man is working with equipment that calls for a lot of tinkering in order to do a job properly watch him lose patience and start the "rough stuff." If he sees the boss he will probably manage to curb his bad temper until that noted personage gets by. But if you know anything about human nature you will know that what I say is true, whether you catch the man in the act or not. You may not have thought of those worn out machines of yours in just that light, but now that it has been brought to your attention can't you see the force of the argument.

I was watching a man setting up a sticker a short time ago. The machine did fair work, but the man operating it told me he would venture to bet that no other man could operate it and get the same quality of work. This was not boasting, as you will see. He stated that he had been operating the machine since it was bought thirty years before (and it was second hand then) and knew all its weaknesses. By wasting valuable hours he was able to make adjustments to counteract the machine's failings. No other man would be as intimately acquainted with all the parts of the machine that were out of line, and, consequently passable work would be an impossibility. The machine was disposed of shortly after for another second hand one. If the cost of the first one could be presented to the owner of the plant in black and white the money paid out in wages for the untold hours that were wasted in setting it up and making adjustments, I am certain he would never have bought another second hand machine.

High Labor Costs Results

I know a piano factory where they have three surfacers. None of them are any good, but still all of the core stock for their piano cases are dressed on them. I don't know just how much trouble they have with their veneering operations, but I do know that to get passable work from any one of those surfacers calls for a labor cost that is out of all proportion to the amount of work being done.

The owner of this plant, although he is at his office in the factory building every day, never puts his nose inside the manufacturing departments from one year's end to another. When the foreman go after him about equipment he sits in his office and bullies them into submission. They return to their work in a frame of mind which is anything but conducive to good work. They could not sell me one of their pianos on a bet, and I have no axe to grind. Why should the men attempt to do good work if the boss won't?

I simply use this example to point out to those men responsible for the production of plants making veneered goods that if they are careless about their equipment they should not expect their employees to take the pains with their work that they would take if the plant was equipped with good machinery. Get good machinery if you have to go into debt for it. The equipment you buy, if you buy properly, will not only get you out of debt again, but will make you a profit. If you are worrying along with machines twenty or thirty years old you are throwing your profits away. They are being eaten up in unproductive labor.

If you think I am exaggerating call in an industrial engineer who is thoroughly posted on your line of work, and let him show you. If you don't want to do that take a trip through the plants of some of your competitors, or someone handling a similar line of work, and see for yourself. Make a few inquiries about where the well equipped ones are to be found.

Attention to Details Essential

If you want to turn out a worth while product, and do it economically, it is absolutely essential to start at the beginning and follow all the way through the plant. How about your dry kiln? There is a lot of money being thrown away by manufacturers in the operation of antiquated dry-kilns. Lumber, to be veneered properly, must be thoroughly dry. It is not enough to stick it into a shed full of steam pipes and then think it is dry. Test it. There are instruments on the market for the purpose. These instruments may prove to you more forcibly than pages of printed matter the effort that is necessary to dry your lumber

in the dry-kiln you are using, and the waste of time involved.

Associated with dry-kilns are storage buildings in which the lumber is allowed to remain for sometime after it is removed from the kiln. Then comes the machinery for preparing the corestock, and finally the equipment for drying the veneer, gluing the corestock, pressing the veneer on the cores, drying the veneered panels, etc.

There are many details in connection with preparing the glue, drying the lumber, drying the veneer, etc., on which articles appear from time to time. Some of the better posted men in the trade may think once in a while that this material covers ground trodden many times before and suggests certain methods which are elementary to him. For the benefit of these I would like to say that all they have to do if they doubt the laxity existing in many plants is to take a little time and visit some of them.

Responsibility Rests With Management

This article is written particularly for the eye of the plant owner or executive. I maintain that he is largely responsible for the carelessness to be found in his plant through not setting a good example. If he wants his men to put their best work on his products let him furnish them with the best equipment he can get for the class of work he is doing. If he wants his corestock properly surfaced, for instance, let him buy a modern type surfacer, one that can be adjusted without a lot of tinkering on the part of the operator. Forget the price. If you have the work to do, the machine will pay for itself and show you a handsome profit.

It is the policy of some plant executives to buy on price alone. The foreman in the plant where the three surfacers which I spoke of before are located told me that when the last addition to their planer equipment was made the owner sent him to a machinery house to look over the machines available and report. An opposition firm was in the market for a surfacer at the same time, and they, too, sent their foreman to inspect the offerings and report back to the office.

Lets Price Influence Buying

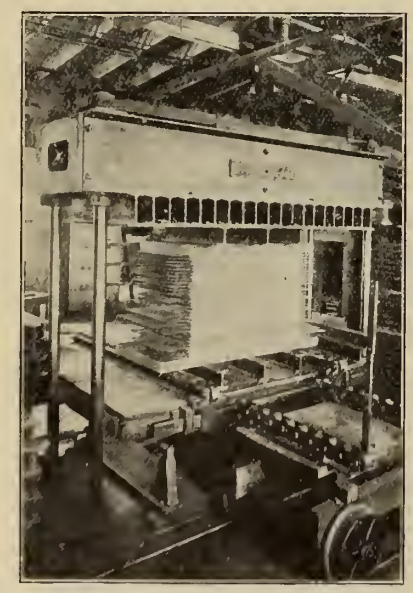
There were three machines available, a really high grade machine which the maker's name will sell any time, another, a second hand machine of a good make, and a very old type machine that had been patched up for resale. The prices were fifteen hundred, six hundred and fifty, and three hundred and fifty dollars respectively. When the two foremen reported the management of the opposition would consider nothing but the fifteen hundred dollar machine and the other firm would look at nothing but the three hundred and fifty dollar one.

In telling me about the incident the foreman imparted the information that he would go a long way to get a job in the opposition plant. Do you blame him? If you want good work give your men the equipment. Set them an example. Show them you want good work. Don't let them infer from the equipment of your plant that anything will satisfy you.

A Novel Sales Idea

An unusually effective direct sales idea was recently adopted by the Stow Manufacturing Company, Inc., Binghampton, N. C., when they attached a German 100,000 mark note to a sales letter they recently sent out to their prospects. Not only would a letter with a note of this kind attached receive attention, but the analogy drawn, namely that poor equipment depreciates as rapidly as the German mark has, is a rather impressive one.

Interesting Views in Sonora Plant at Saginaw, Michigan



Veneered cores or panels in the hydraulic press

Sorting and matching veneers

Amplifier parts in clamps after removal from press

Courtesy Phonograph Journal

OAK MAHOGANY CIRCASSIAN MAPLE

VENEERS

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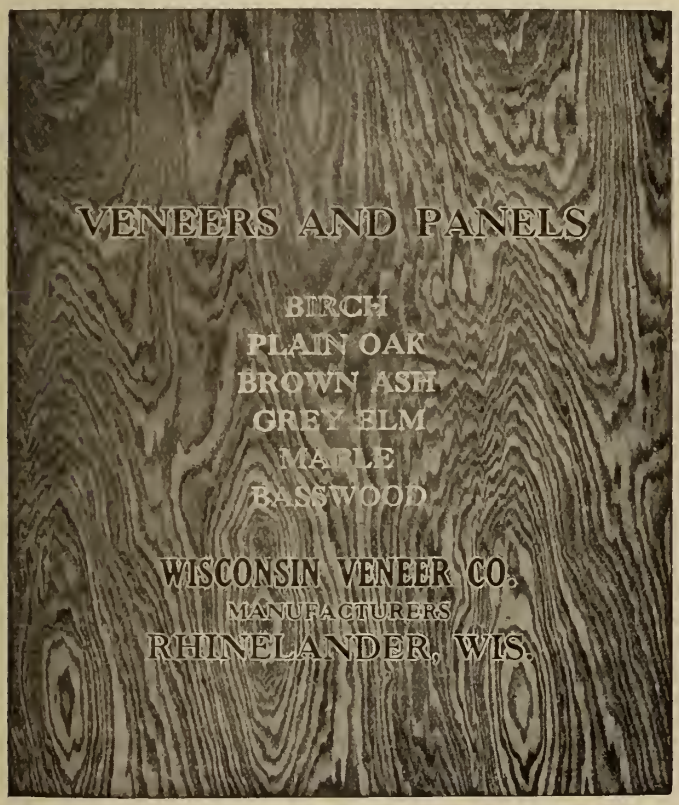

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(When writing mention Canadian Woodworker)

More Views in Sonora Plant

Operator at the bulge core lathe

Laying up veneers—the glue spreader in background

Department in which Sonoras are finally assembled

Courtesy Phonograph Journal

How to Veneer Curved Surfaces

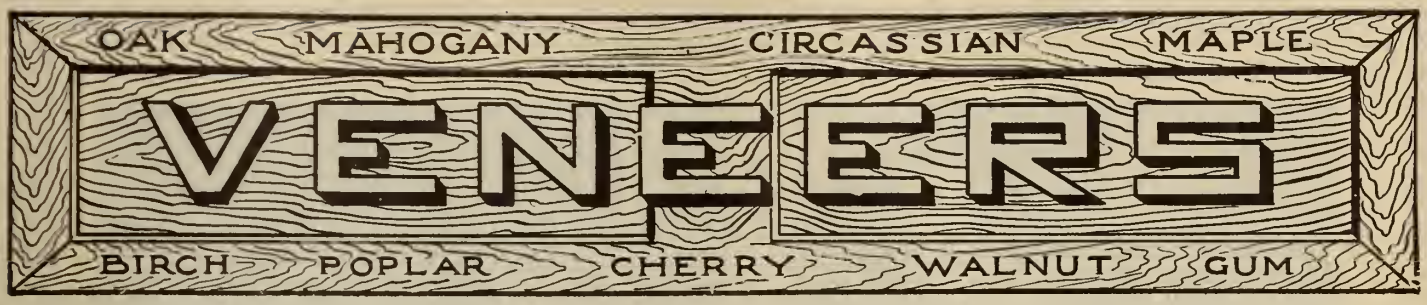
Should Glue be Applied to Veneers on Curved Work—How Round Columns are Handled—Some Points to Watch

Could we hold a court of inquiry, we would most likely be surprised to learn how many persons apply the glue to the veneer when veneering bent work, such as moldings, scrolls and columns. But one does not need to do more than examine the offerings in a few large furniture stores, where the product of many factories is handled, to be convinced that the practice of moistening veneer before laying, or applying the glue directly to the veneer is much more prevalent than it should be in view of all that has been said about it, and in view of the results of doing the work in such a wrong way.

If the shape of the core is such that the veneer, when dry enough for laying, will not make the turn without danger of cracking, the right way is to bend it to shape before laying on the permanent core. Have some forms the same shape as those on which the veneer is to be laid, and after moistening the veneer, bend to shape over these forms. If the forms are made of some soft, absorbing wood it will help set the veneer to shape to have the forms heated as hot as can be done without charring the wood. This heating can be done in the caul box. As a rule it is not necessary to have a separate form for each sheet of veneer, for several sheets can be bent to shape at one time over the same form. If it is a plain curve that is to be veneered it is not usually necessary to have the exact form over which to bend the veneer unless the latter is wrinkled or buckled and has to be pressed flat. Crotch and burl veneer should be bent over a form, but plain veneer may be bent with the hands and the edges inserted in a frame, consisting of a bottom board with two pieces to engage the edges of the bent veneer, until the veneer becomes set. Unless it is a pretty sharp curve, rotary-cut stock does not need to be moistened and bent to shape, because its very nature is to bend with the curve on the face side; that, of course, is when the bend is with the grain, rather than across it. Veneer that is to be bent across the grain should be moistened and set to shape either over a form or in a frame. A compound curve should be made over a form; the same should be done if the veneer is to be laid in a concave core.

Veneering Round Columns

Almost every man has his own way of veneering round columns, but there are some ways that are better than others. Sometime ago I saw a man doing the work in the following way: After warming the column he put it in the lathe and applied the glue. The first edge of the veneer he nailed to the column with small brads, one in each corner, then after bringing the veneer up around the column he had a helper turn the lathe while he wound the veneer in place with a strip of webbing about two inches wide. This method was all right except that the man left the veneer about an inch too wide, and had to unwind the column in a half an hour to cut off the lap, and then rewind. A better way would be to first fit the veneer to the column to get the exact size. This can



Buyers of Veneers and Panels

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Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

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A Veneer for Every Purpose

DOMESTIC IMPORTED

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An Especially Fine Line of

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Samples Will be Gladly Submitted on Request

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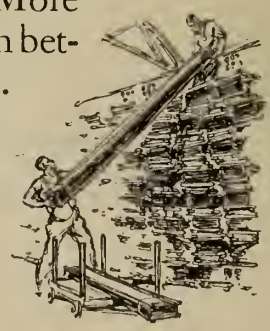
A NEAT little Christmas package tied with red ribbon and decorated with holly. In the upper left-hand corner the name of an old friend of good taste, ample funds and generous impulses. Just below that the inscription, "Do not open until Christmas."

Oh man, what a temptation!

Same way with Wood-Mosaic Veneers. The natural desire is to rip open the crates just as soon as they arrive, pull out the sheets and feast the eye on their exquisite figures and satiny surfaces. But, unless you are ready to use them, hands off! Keep them in the crates until you need them. They will take up less room and, what's more important, they won't become broken, scratched or otherwise damaged.

Of course it isn't at all necessary to open the crates to make sure that the veneers are up to specifications. If by any chance they are not just what you ordered, we're here to make them good at any time. More than likely they're even better than you expected.



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be done by nailing the first edge of the veneer on the column, leaving the top ends of the brade out a little way so that they can be pulled out entirely after the fitting has been done. Draw the veneer tightly around the volumn, and while one man holds it in place cut it to size with a straight edge and a sharp knife. When putting this veneer on permanently, lay a piece of heavy waxed-paper over the joint to keep the glue from coming through and sticking to the webbing.

I once saw a man veneering round columns in this way: When everything was ready he put the glue on the veneer, leaving about an inch at each edge without glue. After the lapse of half an hour or so he took off the webbing, cut off any lap there was in the veneer at the edges, raised the edges and inserted some glue beneath, then wound it down again. I related that to a friend and he said it was the way he first learned how to veneer round columns. However, in order to overcome the expansion of the veneer incident to spreading the glue on it he spread the glue on the core, leaving a strip about two inches wide from end to end of the column along where the joint would be. This did not, however, remove the necessity of unwinding the webbing to trim and glue the edges. This man expressed some doubt about the possibility of fitting the veneer before gluing, but a little practice showed him that it could be done perfectly.

Making a Sand Mould

Some shops that have a great many columns to veneer do the pressing in sand molds. A box, large enough to hold one or more columns, according to the size of the latter, is partly filled with warm sand. A form the shape of the column, or number of columns which the box is to hold, is pressed into the sand to half the thickness of the column. After the veneer has been put on the column, it is placed in the sand mold, the box filled with sand and put under pressure. The box used for this purpose should be firmly constructed, and large enough to leave a space of about 4-in. at each end of the column and the same distance between each other, if more than one is to be put in. There should also be the same amount of space for sand below and above the column.

Veneering columns is not the easiest job in the veneer room, and only the best men should be put at it. When brade are used for holding veneer in place, they should be driven below the veneer with a fine nail-set so as to be out of the way when cleaning-up. These nail holes can be puttied by the finisher. When moistening veneer for bending, remember it is the convex side that should be moistened, for that is the side that expands. It is not necessary to moisten the concave side.—Veneers, Indianapolis.

Filling Checks in Veneers

To fill the checks that appear in veneers after they have been glued up so that they will not show, try this plan, given us by a woodworker: Take fine sawdust obtained from the wood that the veneer is made from and place it in an earthen pot, pour some boiling water over it, and stir it well. Let the mass stand for about eight to ten days, stir it occasionally, and then boil it until it becomes like pulp. Now place it in a coarse muslin bag and expel all the water by squeezing it. This is to be kept on hand for an emergency, and when you wish to use some of it add thin glue size to it and work to a paste. Rub it well into the checks, and when dry and hard sandpaper and dust off. If done right it will be difficult to see the checks, we are told.

Another Economic Essay Contest

Another big chance for pupils of schools below the college grade, to apply their knowledge of economics and incidentally share in the distribution of $1,500 in awards, has been offered by Alvan T. Simonds, President of the Simonds Saw and Steel Company of Fitchburg, Mass. Nine prizes are offered students who write essays on the subject: "Sharing Our National Income."

First prize $500; second prize $300; seven other prizes $100 each. The contest is open to High School, Trade School and Normal School students in the United States and Canada. Conditions and further particulars of this prize contest may be secured from the Contest Editor, Simonds Saw and Steel Co., Fitchburg, Mass.

O.R.L.D.A. Meets in January

The directors of the Ontario Retail Lumber Dealers Association met in Toronto recently to consider plans for the annual convention which is to be held at the King Edward Hotel, Toronto, on January 15th, 16th and 17th. An attractive program has been drawn up which includes a number of papers of interest to woodworkers. Among the subjects to be discussed are sales tax, mechanics liens, cost accounting for millwork plants, and other similar subjects. It is likely that E. F. Hunt, of New York, secretary of the Eastern Millwork Bureau will deliver an address on cost accounting. Mr. Hunt has had considerable experience in this field and will likely throw some new light on this important work.

Warning to Builders

Danger	Trouble
Loss	Annoyance

Don't store or erect inside trim, sash, doors, millwork, or any kind of seasoned lumber in a building unless the plastering is thoroughly dry.

Damp plastering will swell, warp, blister, twist, shrink and otherwise damage or ruin seasoned material.

Follow this advice and you will get a better job.

Southern Sash, Door and Millwork Manufacturers' Association, Atlanta, Ga.

Many copies of this warning are being circulated through the retail yards to their customers, by members of this organization. The suggestion is a good one, for if followed it might save both the manufacturer of millwork and the builder considerable time and expense. This is an idea that any woodworker could put into effect on his own initiative. The Ontario Retail Lumber Dealers Association are contemplating distributing this warning through its membership.

C. L. WILLEY COMPANY

The **Largest Veneer Plant** *in the* **World**

VISIONS are for the Seer, and beauty is for those who have eyes to see. Develop your creative imagination and train your powers of observation by searching for the hidden meanings in WILLEY'S beautiful Veneer. Let us send you samples of Veneer that will inspire your artistic impulse to create a masterpiece in woodwork.

Veneer and Lumber

Walnut
American and Circassian
Mahogany
Quartered Oak
Satinwood
Vermilion
Teak
Rosewood

And Many Other Foreign and Domestic Woods

(2643)

A Cathedral Window

IN his armchair by the Christmas fire an artist—a master craftsman in stained glass—slept and dreamed. In his sleep, unfettered genius stretched its powers to conceive a Christmas window, wrought of gold and jewels instead of lead and glass.

In the centre of his design he set a massive four-pointed diamond, shining like the Star of Bethlehem. Around this he fashioned first a thorny crown; then crosses, one behind another, bearing emblems of the Holy Grail—the ruby goblet, the sacred spear, the skull-shaped rock, the passion flower. In the corners of the window, completing the diagonal cross, he shaped fierce faces of Crusaders and Saracens, kings and knights who had contended for the Holy Sepulchre, their shields and helmets glittering with gems.

Suddenly waking, the artist grasped his pencil, and drew the outlines of his radiant vision, in haste lest it should vanish from his memory. His little son, leaning against his knee, watched in breathless silence till the intricate design was finished, then pointed to a panel of rare Veneer which formed part of the mantel-piece above the fire. "Look, Father," he said, "you have drawn the panel from memory. You did not even look at it once."

The artist, lifting bewildered eyes, saw before him the pattern of his Christmas windows, traced in the four-fold symmetry of perfectly matched Veneer, as pictured at the left—a photograph of Willey Veneers.

C. L. WILLEY COMPANY

2558 South Robey Street CHICAGO

J. SMITH, Sales Representative
216 Mead Building, Rockford, Ill.

EARL VAN, Eastern Sales Representative
Everett Hotel, Jamestown, N.Y.

General Woodworking Trade Mart

Quick Action Section

Equipment Materials Employment

Factory Surveys Made

Some factories make a profit but should make more. Other factories lose money yet should be making a profit. I have been making practical surveys of Furniture factories for 20 years. Have had free access to hundreds of factories and know what makes some successful and others failures. Have also built and managed factories. If interested—address Box 163 care Canadian Woodworker, Toronto. 9-12

FOR SALE

Sash and Door Factory

Completely equipped modern and up-to-date machinery with Planing Mill and good Retail Lumber Business in connection. Railway siding and all requirements of up-to-date plant within trucking distance of Toronto.

A Real Opportunity

Good market established.

Suitable terms can be arranged.

Get full particulars by addressing Box 166, Canadian Woodworker, Toronto, Ont. 12

Woodworking Machines

S. A. Woods Matcher 15 x 6 x 6 Round Heads, Double Profilers.
S. A. Woods Moulder No. 131, Slip on Heads.
American Saw Table No. 8.
H. B. Smith Double End Tenoning Machine.
H. B. Smith 42" 3 Drum Sander.
Jackson Cochrane Single End Tenoner.
S. A. Woods 30" Knife Grinder.
Baxter D. Whitney 36" Planer.
Smith 30" Jointer, with Billstrom self-feed attachment.
Dodds 12 Spindle Dovetail Machine.
Jackson Cochrane Revolving Case Clamp
Oliver Variety Saw.
Greenlee Horizontal Hollow Chisel Mortiser.
American Shaper No. 2½.
2 Motors 40 H.P., 60 Cycle, 3 phase, 440 or 220 Volts, 870 and 1190 R.P.M.

We have also a number of other machines, and a quantity of Belting and Pulleys on which we are quoting very low prices.

W. BRANSCOMBE,
1405 Lansdowne Avenue, Toronto. 12

WANTED

Upholstery foreman for factory in New York State, department twenty men. Must be capable of assuming full charge of cutting, instruction, and supervision. Excellent opportunity for competent man. Permanent. Address Box 165, Canadian Woodworker, Toronto. 12

Nailing Machine

1—practically new, No. 16, Morgan 36" Open Back Nailing Machine, latest type, with Cleating and Clinching Attachments; Power raising and lowering device to table. Price $1600.00 f.o.b. cars, Bridgewater, Nova Scotia. Immediate shipment, subject prior to sale. Apply: FLEMING & MACLEAY, AGENTS, Bridgewater, N.S. 7-T.f.

Box Making Machinery For Sale

We have for disposal the following machinery, all in good order, from the plant of the Dominion Box & Package Co., Montreal.

1—Linderman automatic dovetailer, 8 ft.
1—Linderman automatic dovetailer, 4 ft.
1—Morgan Box Board Matcher.
1—Berlin No. 229 Adjustable Hopper feed cut-off saw.
1—Mereen Johnson Hopper feed box board squeezer.
1—P. B. Yates No. 213 Cintinuous feed jointer.
1—Morgan Box Board Matcher (old type)
1—St. Paul Double end Box Dovetailer with squeezer and trimmer.
1—48" Double disc sander.
1—Chase Turbine Groover.
1—Macgregor Gourlay combination saw table. Similar to C.M.C. No. 616.
3—Reynolds automatic screw drivers.
1—B. G. Luther double cut off saw.
2—Morgan shook splicers, for corrugated fastners
1—M. L. Andrews Multiple Boring Machine.
3—12 Punch Morgan open back nailers.
1—10 Punch Morgan open back nailer.
1— 8 Punch Morgan open back nailer.
1— 8 Punch Morgan closed back nailer.
1— 8 Punch Morgan closed back nailer with side arm attachment.
2—6 Punch Morgan closed back nailer.
1—13 Punch Doig nailer 1915 Model.
1— 9 Punch Doig nailer 1915 Model.
1—S A. Woods lock corner machine No. 211.
1—Morgan No. 1 Setting up machine.
1—Setting up machine, foot operated.
1—Chase Hand hole machine.
1—Defiance No. 2 Belt Sander.
1—48 in. Double disc sander.
1—Garvin No. 2, 5 spindle drill.
1—B. G. Luther Box board squeezer.
1—F. X. Hooper two color printing press, 20 x 14 cylinder.
1—Single color printing press, 33 x 18 in. cylinder.
1—Prouty Printing press, 11 x 17 in.
1—Prouty Printing press, 16 x 26 in.
Several sets steel type, various sizes.
1—Gardner speed lathe.
1—150 punch two day International time clock.
800 gross 2 x 10" Brass wood screws in kegs.

Prices and further information gladly furnished on request.

The Redfern Lumber Co.,
920 Charlevoix St.,
Montreal

Your Factory Engineer

Should receive twice monthly a magazine that will tell him how to eliminate electrical troubles in the factory and show him how to cut your power costs. The ELECTRICAL NEWS is published for the benefit of users of electricity and contains valuable information for all factory superintendents who use electric power. $2.00 per year of 24 issues. Write to 349 Adelaide Street, West, Toronto. 6-t.f.

Progress of Furniture Mart

With a regiment of nearly 1500 concrete men(bricklayers, plasterers, electricians, plumbers and other artisans working at top speed, the American Furniture Mart, the world's largest building, is rapidly nearing completion at 666 Lake Shore Drive, Chicago.

"It now looks as if we would have the concrete structure completed by February 1," said W. A. Forshee, superintendent of construction for the Wells Brothers Construction Company. "And of course, the interior work will be well toward completion by that time."

The Kapok Tree

The kapok tree, or the ceiba pentendra, great rows of which border the long stretches of road in Java, is unattractive in appearance.

The kapok is a sturdy tree, grows to great heights, and, besides being desirable for its fluffy, silken wool, lends itself admirably as telephone or telegraph poles along the roads. It is, therefore, a general utility tree, easily propagated, easily kept productive.

The kapok tree commences to blossom during April and May and continues until Autumn when the flowers disappear, leaving a pod which contains the fibre.

During August and September these pods are gathered by the natives and the fibre extracted, baled, and carried to coast towns, where it is sold to merchants. Here it is sorted as to quality, pressed into bales and shipped to various parts of the world. Kapok is used for many purposes, principally as a mattress filler.

SIMONDS SAWS

Greater production and longer runs are possible when SIMONDS SAWS ARE USED. Because they are made of special saw steel produced in Simonds Steel Mills, these saws hold their edge longer and require less fitting.

Write for catalog and prices

Simonds Canada Saw Company, Limited

St. John, N. B. MONTREAL QUE. Vancouver, B. C.

The Lumber Market

Domestic Woods

The outstanding feature of the present lumber situation is that present price levels are holding firm. In many quarters it was thought that due to a lack of demand lumber prices would soften and show a recession on many items, but such has not been the case. The concensus of opinion seems to be that prices will not go any lower during the next six or eight months, but that as the new stock comes on the market next spring there may be a slight upward tendency due to the fact that production costs are showing an increase. One element that is receiving considerable attention is the new sales tax. While many lumbermen and wood users are in doubt as to just how this tax applies to them, there is no doubt but that the imposition of a six per cent. tax will add materially to the cost of lumber. Good progress is being made in the bush operations, a plentiful supply of men being available. While wages in the woods are fairly constant, the average pay is around forty-five dollars per month, which is considerably higher than last year, and which will probably result in an increase of from 10 to 20 per cent. in woods costs. Many lumbermen have sold out their stock of hardwoods and are finding it increasingly difficult to replenish them. At the moment there is very little hardwood moving, though there is a deferred demand which it is thought will result in a considerable volume of buying during early part of the coming year. Inquiries for hardwoods continue to come in, but for the present at least, are not resulting in any volume of buying. The 1924 hardwood cut will hardly be ready for shipping much before June or July, so should a shortage of local hardwood develop it will likely be reflected in higher prices during the first six months of the year.

Imported Woods

There has not been any material change in the American hardwood market, though in some centres there has been a slight strengthening of demand characterized by greater frequency and more satisfactory size of incoming orders. This does not hold true of all producing centres, neither does it apply to all woods. The explanation of this is that for some time buying has not kept pace with actual requirements and as a result many wood users have found that their stocks of various hardwoods were not adequate enough to take care of their present factory requirements. While it is not likely that there will be any tendency to stock up and buy for future needs until some time early in the new year, yet orders are being placed for fair quantities of material with the delivery date some 60 or 90 days ahead. This in itself is an indication that lumber users are becoming convinced that further price recessions are not probable, but that a stiffening of values is likely to occur. This point is further emphasized by the fact that some of the orders placed for future delivery were at a price slightly in advance of recent quotations. It is considered likely that the January furniture markets will result in a satisfactory volume of orders and will result in the furniture industry entering the market for fair quantities of stock. Regardless of whether or not the January markets are unusually active, some business is certain to result and owing to the fact that the stocks in the hands of the furniture industry are comparatively low, the business placed during January shows cannot help but be reffected in the lumber arena.

A prominent Memphis firm, which had only enough orders a few weeks ago to keep its two band mills in Mississippi operating at capacity for a single week and which now states that its order books are in the same condition as then, shipped more lumber during the month of October than during any previous month in its history. Others have made approximately as good a record. All of which is accepted as indicating quite definitely that, although consuming interests are placing no big orders ahead, they are carrying such limited stocks of raw lumber that they are under the necessity of buying with very great frequency and in decided volume.

This heavy current absorption of southern hardwoods is one of the outstanding features of the situation at the moment. Another is found in the fact that inquiries are reaching this center from prominent consuming interests who are looking ahead with reference to their needs during the first six months of 1924. These inquiries involve large quantities of lumber and they have brought considerable cheer to southern producers. Production is proceeding under quite favorable weather conditions and with a somewhat larger supply of logs in sight, but shipments are continuing so large that there is no burdensome accumulation of hardwood lumber. Practically all items are in request and conditions are generally pronounced thoroughly wholesome by the trade.

It is noted in some instances that the margin of profit is comparatively small, but volume is offsetting this feature to an appreciable extent. The general expectation here is that buying will continue quite full practically up to the holiday season and that there will be less than normal letting-down during Christmas and the inventory period, largely because of the depleted condition of stocks which necessitates frequent replacements on the part of consuming interests.

The building trades are buying in larger volume than is usual at this time of the year and the automobile manufacturers are steadily covering their requirements. Furniture interests are taking only such lumber as they need for early use but they are in the market in a substantial way. The same is true of box manufacturers. Foreign demand is slightly better than during the preceding week, largely as a result of the rather pronounced recovery in sterling exchange and in French francs.

If you asked a carpenter about 20 years ago as to what part of his work could not be done by machinery, he would have said, "Well they won't be able to put screws in by machinery."—So you see it is never safe to prophesy.

Good glue should penetrate into the fibres of the wood and retain a firm hold there to make a good joint. If it was viewed under a microscope it would appear like millions of rivets fixed in each board holding the two together.

The Sidmans of Canada

Heating and Ventilating Engineers and Lumber Curing Specialists

Designers of

The Sidman Lumber Curing Kiln

and accessories for all drying purposes

The Sidman Gravity System

for heating factories

Either with Low Pressure Cast Iron Boilers for factories and kilns, where "Juice" is used for power, or,

Using Exhaust steam and reduced Live Steam, with ALL Condensation AUTOMATICALLY returned direct to the boiler by means of THE SIDMAN SUCTION SYSTEM.

NOTE: The SUCTION SYSTEM can be used on any and all old heating plants, and will effect a substantial saving in fuel, and a BIG saving in trouble and repairs.

THE SIDMAN AUTOMATIC STEAM-VACUUM SYSTEMS, for all kinds of houses or Office Buildings. The cheapest to operate, and MOST SATISFACTORY system ever used. Burns any kind of fuel.

Plans for ALL the above can be furnished BY MAIL, saving for the user THE SELLING EXPENSE.

Write us for details.

The Sidmans of Canada

LONDON ONTARIO

"Well Bought is Half Sold"

SPECIAL MENTION WHITE PINE

"Hearty Christmas Greetings"

Canadian General Lumber

Company Limited

FOREST PRODUCTS

TORONTO OFFICE:—
1005 Federal Building

Montreal Office:—514 Canada Cement Company Building

Mills: Byng Inlet, Ont.

News of the Trade

E. Dionne, St. Mathieu, Que., is contemplating the purchase of a swing cut saw.

L. Pellitier, Rimouski, Que., is in the market for equipment for a sawmill.

J. A. Gagnon, Amqui, Que., is in the market for equipment for a sawmill.

Fire recently destroyed the wagon shop of Alvin McKnight at Rockton, Ont.

The Board of Education of London, Ont., is reported to be in the market for manual training equipment.

F. C. Brault recently installed a plant at 1536 Dundas St., W., Toronto, to manufacture sash and doors.

The Toronto Rattan Co., have secured larger quarters in a building on McDonnell Square, Toronto.

F. H Plant, Limited, Ottawa, manufacturers of wagons and vehicles, recently suffered a loss by fire.

The Excelsior Lumber & Shingle Co., Vancouver, B. C., are planning the erection of a new saw-mill.

Bourgie & Fils, 494 Nicholet St., Montreal, are in the market for machinery to equip a planing mill.

Bertrad Wooden Box Co., 34 Benoit St., Montreal, contemplate the purchase of a dove-tailing machine.

Victoria Lumber & Manufacturing, Chemainus, B. C., who were burned out recently are in the market for machinery and equipment.

Hammond Cedar Milling Co., Port Coquitlam, B. C., are in the market for machinery and equipment for a $200,000 lumber mill.

United Shingle Mills, New Westminster, B. C., are in the market for machinery and equipment which was lost in a recent fire.

There have been some changes in the organization of J. Kreiner & Co., Kitchener, Ont., furniture manufacturers. W. W. Sieguin of Kitchener is now in charge.

The Farlinger Co., Limited, Sioux Lookout, Ont., is a new enterprise recently organized to manufacture all kinds of wood products. Capital $2,500,000.

The American La France Engine Co. of Canada, Toronto, contemplate an addition to their plant for the manufacture of the motor truck recently introduced in United States by the parent company.

The Flint Varnish & Color Works, Limited, are working on an addition to their plant to take care of the growing demand for their lacquer products.

Barbeau Freres, Ltd., Montreal, P. Q., was recently granted a provincial charter to manufacture carriages and motor boats. Capital $19,000.

The Montague Sash & Door Factory, Montague, P.E.I., which is operated by Isaac Ives & Son, was recently destroyed by fire. The loss is $20,000 without any insurance.

The Canada Spool & Bobbin Co., Walkerton, Ont., has made a request to the town council for a further guarantee of bonds to enable them to enlarge their plant.

The planing mill of Rock Bros., Brodhagen, Ont., was recently destroyed by fire. Loss $16,000. The owners plan on rebuilding without any delay.

Price & Cummings, Toronto, together with Arthur Orr, of Orr & McGraw, boat builders, have leased a large site at Toronto, and contemplate erecting a boat factory.

An unusually active plant at the present season is that of Baetz Bros. Specialty Co., Limited, Kitchener, Ont. About 50 hands are busily engaged in making fine lamps and shades of various kinds.

The Durham Furniture Co, Durham, Ont., will be under the same management and directorate for another year, the same officers and board of directors having been re-appointed at the recent annual meeting.

W. N. Manning of the Sherlock Manning Piano Co., London, Ontario, was elected president of the Canadian Piano & Organ Manufacturers Association at the convention held recently in Montreal.

Ontario Piano & Music Co., Limited, Toronto, is a new organization recently formed to manufacture and deal in pianos, organs, phonographs and other musical instruments. Capital $40,000.

Christian E. Huehn, owner of the Fischman Spring Co., Kitchener, Ont., died recently. The business is being continued under the management of Joseph Wuest, a nephew of the deceased.

E. Sondheimer Co, Memphis, Tenn., well known manufacturer of southern hardwoods, recently celebrated the occasion of its fiftieth anniversary. Max Sondheimer, the chief executive of the company is in his 65th year.

The erection of the new furniture factory of J. E. Collin, at St. Thomas, P. Q. is progressing steadily. The new building will be three storeys, 60 x 100 feet in dimension and of concrete and brick construction.

An item in the November Canadian Woodworker referring to the addition to the Morrow Manufacturing Co., Ltd., were making to their plant gave their address as London, Ont., instead of Moncton, N. B.

Fire recently destroyed the box factory of Manufacture de Boites de St. Evariste, St. Evariste, P. Q. The loss on the building is $20,000 and the damage to machinery and contents is estimated at $10,000.

Baileys Upholstering Works, Niagara Falls, Ont., have taken over the retail furniture business of South Bros., and will continue it, as well as carry on the manufacture of special order upholstered furniture.

The Westminster Furniture Co., New Westminster, B. C., report a satisfactory volume of business. Their line consists of household and office furniture from B. C. woods chiefly. Walter Dodd and Robert Steele are in charge.

The J. B. Watson Furniture Co., Limited, Kincardine, Ont., contemplate erecting an addition to their plant. It is likely that a by-law will be submitted to the Kincardine rate payers shortly covering this proposed extension.

The Caithness Lumber Co., Limited, Hearst, Ont., has been incorporated to manufacture and deal in wood products of all kinds. Capital $150,000. A. H. Britton and A. B. Mortimer, barristers-at-law, Toronto, are among the incorporators.

De Forest Radio Corporation, Limited, Toronto, Ont., was recently incorporated to manufacture and deal in radio equipment, pronographs and musical instruments. Capital $100,000. Among the incorporators are D. H. Rowan and L. A. Richard, solicitors, both of Toronto.

La Compagnie Prevost, Limited. Giffard, P. Q., is a new enterprise recently formed to manufacture all kinds of furniture and wooden toys. Capital $99,000. Joseph Prevost of Montmagny and Alyre Prevost of Quebec, are two of the incorporators.

J. Oliver & Sons, Ottawa, Ont., recently celebrated their 60th anniversary. This business was founded in 1869, under the name Holgate & Oliver. In 1872 Mr. Holgate retired and

If fire should visit your plant tonight

If fire should visit your plant tonight—would it be effectually smothered by an "Automatic" Sprinkler System the minute it started, or would it continue to gain headway until the firemen arrived, with a consequent loss running into the thousands?

We have some information on this subject that will interest you.

The Bennett & Wright Co.

Limited ——— Contractors

72 Queen Street East TORONTO

Western Ontario Branch

77-81 King Street London

CARVED MOULDINGS, CARVINGS, CARVED LEGS

No. D-775 (Reduced One-Half)

No. D-763 (Reduced One-Half)

"KLISE' mouldings are carved, not pressed. Made in several hundred classic, period designs, in various sizes and shapes. Catalogue of legs and samples of mouldings sent on request. Send us your designs or samples of carvings for quotation.

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Grand Rapids, Michigan

CHOOSING A SOURCE OF SUPPLY --

-- is not always an easy matter for the Lumber Buyer

YOU CAN DEPEND ON US --

-- our modern operation and experience insures you

QUALITY CO-OPERATION

Inquiries Solicited

PLAIN RED OAK
50,000 4/4 FAS
150,000 4/4 No. 1 Com.

PLAIN WHITE OAK
100,000 4/4 FAS
16,000 1/2 FAS
193,000 4/4 No. 1 Com.
10,000 8/4 FAS

ASH
25,000 4/4 FAS
25,000 4/4 No. 1 Com.

PLAIN SAP GUM
23,000 5/8 FAS
32,000 5/8 No. 1 Com.
75,000 3/4 FAS

PLAIN RED GUM
40,000 4/4 FAS
50,000 6/4 FAS
100,000 4/4 No. 1 Com.
45,000 6/4 No. 1 Com.

QTD. RED GUM
20,000 4/4 FAS
50,000 4/4 No. 1 Com.

ELM
50,000 6/4 Com. & Btr.
14,000 6/4 No. 2 Com.

TUPELO GUM
15,000 13-17 Bx. Bds.
15,000 4/4 FAS

HICKORY
50,000 6/4" Log Run

KELLOGG LUMBER COMPANY INC.

FONDALE, LOUISIANA

the firm name was changed to Oliver & Sons. The fourth generation of Olivers is now in control.

A woodworking plant is to be installed in connection with the new plant the Beaver Truck Corporation, Limited, Hamilton, Ontario, are erecting at Brampton, Ontario. This department, which is to be approximately 140 ft. x 46 ft. will be equipped with modern woodworking machines.

The plant of G. W. Murray, Limited, Winnipeg, Man., was recently destroyed by fire entailing a loss of $45,000. This is fully covered by insurance The products of this concern were show cases, wood turnings, mouldings, and general wood products.

The Canadian Lumber Co., Limited, Stewiacke, N. S, contemplate erecting a planing mill to replace the one recently destroyed by fire. Such equipment as planers and matchers, band re-saw, moulder, power feed rip saw, cut off saws, and filing room equipment is to be installed

The John Lewis Peg & Box Co. Ship Harbor, N. S., was recently destroyed by fire. About 75 employees were thrown out of work by the blaze A crew of men were immediately put to work clearing up the ruins and a new plant will be put up with all possible speed.

The Ontario Casket & Supply Co., Limited, Toronto, Ont., was recently incorporated to carry on a general woodworking business and to manufacture and deal in caskets and coffins. Capital $40,000. T. H. Wilson and A. W. Graham, barristers-at-law, Toronto, are two of the incorporators.

Christian R. Honderich, president of the H. E. Furniture Co., Limited, Milverton, Ont., recently passed away. Mr. Honderich was in his 67th year. He located at Milverton 51 years ago and before engaging in furniture manufacturing he operated a planing mill and carried on a building and contracting business.

O. D. Anderson, who was formerly a well-known figure in the furniture manufacturing field recently passed away at Calgary, Alta. He retired from the furniture field some ten years ago. At one time Mr. Anderson operated the large plant at Woodstock, Ont., now under control of the Canada Furniture Manufacturers, Limited.

Canada Wood Specialty Co., Limited, Orillia, Ont., are contemplating the erection of a new factory at an approximate cost of $85,000. A By-law will be submitted to the ratepayers on January 1st to authorize a loan of $50,000 for twenty years. If it is approved the company will wreck the present buildings in preparation for the new plant.

The Stratford Casket Co., Stratford, Ont., is a new industry which recently commenced operations in that city. For the present, wood parts will be got out by one or more of the Stratford woodworking plants, though it is expected that before very long this new industry will be in a plant of its own. A. J. Hartford, formerly of the Harriston Casket Co., is in charge of the new company.

J. B. Mackenzie, Georgetown, Ont., has developed quite a business in storm sash and storm doors through advertising. He found this form of constructive sales work so advantageous he was forced to discontinue his advertising in an effort to catch up with the orders coming in. This is just one more instance tending to show that there is business available for those who will go after it.

The new plant of the Montmagny Furniture Manufacturing Co., Limited, Montmagny, P. Q., is a three storey building 60 ft x 100 ft. of brick and concrete construction. It is entirely fireproof. The equipment to be installed was secured sometime ago and has been in operation in a temporary plant. For the present, high-grade and medium grade bedroom furniture is being manufactured, although it is likely that early in the year a line of dining room furniture will be added. An auxiliary electric installation has been made to provide power in case the steam plant breaks down.

The Philadelphia division of the B. F. Sturtevant Co., Boston, Mass, has been moved to Camden, N. J., where a large modern plant has been completed. This new building will contain an up to date shop for manufacturing the sheet metal work required for the installation of their well known fan systems, including heating, ventilating, drying, exhaust systems and metal work. In addition guards for machines, tools, and gears will be produced. The new plant will have over four times the capacity of their former Philadelphia branch and will enable them to give their many clients in the territory served an unusually prompt and efficient service.

According to figures recently issued the number of pianos and organs imported from Canada by British dealers during 1922 was 47 pianos and 40 organs. This is a marked contrast to the large export business formerly enjoyed by Canadian producers of musical instruments, and may be laid to the high import tariffs imposed on this class of goods by the British Government. Under the existing British tariff the trade that was once enjoyed by Canadian musical instrument manufacturers is now going to German producers of pianos and organs. This is not that the Germans are producing a better instrument, but is due to the fact that the freight rates between Great Britain and Germany are lower than between the British Isles and Canada.

According to the annual statement of Carriage Factories, Limited, for the fiscal year ending July 31, 1923, this company made a much better showing than the previous year although a loss was made. According to the 1922 statement the loss for that year was $228,625, whereas the loss this year has been reduced to $43,000, after allowing for a depreciation to the extent of $25,000 and an inventory reserve of $14,000.

The Door Carrier System

Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

DRY KILN DOOR CARRIER CO.

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Elliot Woodworkers

We carry in stock at Toronto a complete line of Elliot products, including the new No. 8 Elliot Woodworker with underslung Rip Saw Attachment. The new 16″ Pony Planer, Combination Jig Saw and Shaper, 28″ Ball Bearing Band Saw, 12″ Drum Sander, and the No. 7 Saw Table with Jointer and Boring Table. Write for cuts and prices, or call and see the machines operated.

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The Famous
Baeder-Adamson Brand

has proved its superiority for many years and is the choice of woodworking plants throughout Canada. It comes in Reams and Rolls and is now

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and may be secured from your nearest jobber.

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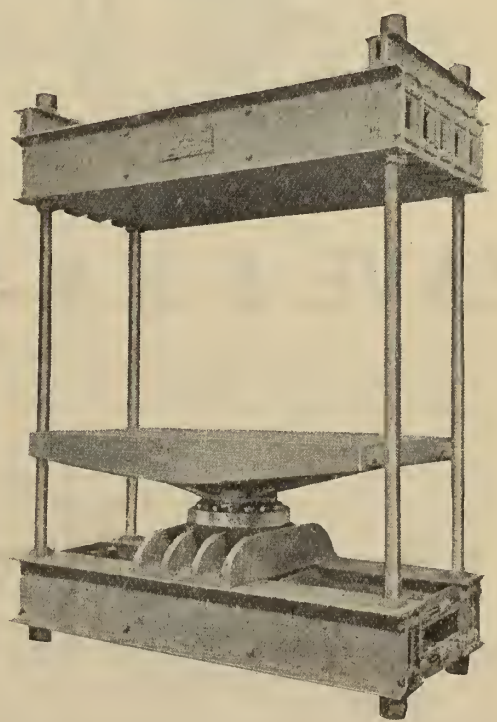
The production of your veneer room will be increased many times and the work greatly improved if you substitute the Perrin Hydraulic Veneer Press for those you are using. This is the actual experience of furniture manufacturers who have installed them. The Perrin Press enables the operator to exert the required amount of pressure evenly over the whole surface, and the work comes out perfectly straight and flat. That means better workmanship and a finer product.

We will gladly give you full particulars and show you what users have to say about it without obligation to you.



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Reliable Glue Lines with

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WATERPROOF GLUES

For both Joint Work and Veneering

Mixed COLD in COLD Water — Impervious to heat and moisture — Used COLD on COLD Lumber

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THE CASEIN MANUFACTURING CO.
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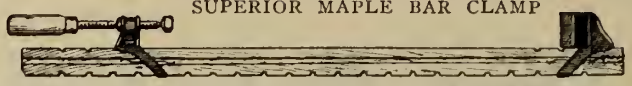

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The Superior Maple Bar Clamp is the only clamp with both head and tail block adjustable, so as to hold firmly at any angle. Adjustable clamp castings cost you only $1.65. Mounted on maple bars—any length from 2 to 10 feet, in foot lengths, at 14 cents per foot.
This clamp will not mar the finest finish, and is guaranteed not to break under reasonable use.

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USED COLD

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"Bulldog Grip" Wood Cement is an asset to any wood working plant. Mix it cold, use it cold. Think of the saving on this alone. Heat, cold, moisture or water will not harm it.

"Bulldog Grip" Wood Cement covers more surface than other methods. It is strong, uniform, and is economical.

WRITE US FOR SAMPLE

Canadian Wood Cement Co., Inc.
Casein Manufacturers
279 Visitation Street, Montreal, P. Q.

Greetings of the Season

In closing the Old Year and entering the New Year, our thoughts go back in retrospect.

We thank our many friends and customers for their valued business and support to us in the past and hope that our relations will be as pleasant in the future as they have been heretofore.

Kane Manufacturing Co.
1832-42 S. Clark St.
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Manufacture the Best
PLANER KNIVES and CUTTERS
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Maple Leaf Saws are fast cutting and retain their edge longer than any other saws, because they are made from extra refined Razor Steel, tempered by our own secret process.

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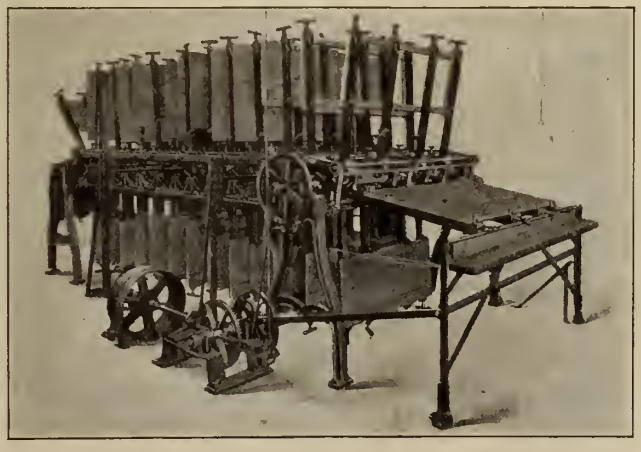
"The largest all-Canadian saw Manufacturers"

One Man Does the Work of Two
with a Billstrom Glue Clamp Carrier



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Here's why:—

The empty clamp is held at just the right height for the greatest convenience of the workman.

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One man can accomplish as much by using it as two men can do employing the old methods.

It holds the work off the floor until the glue has set, when the glued stock can be quickly removed and piled flat, thus greatly conserving space.

It reduces the labor and cost of edge gluing to the minimum.

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The following regulations apply to all advertisers:—Full page, every issue, thirty-two headings; half page, sixteen headings; quarter page, eight headings; eighth page, four headings.

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De Vilbiss Mfg. Co. Toledo, Ohio.

AIR COMPRESSORS
Smart-Turner Machine Co., Hamilton, Ont.

ALCOHOL
Can. Industrial Alcohol Co. Ltd., Monteal, P.Q.

APPRAISERS
Canadian Appraisal Company, Montreal

AUTOMATIC FEED PUMPS
Smart-Turner Machine Co., Hamilton, Ont.

AUTOMATIC TELEPHONES
Northern Electric Co., Montreal, Que.

BALL BEARINGS
Bond Engineering Works, Toronto, Ont.
Canadian SKF Company, Toronto, Ont.

BALUSTER LATHES
Mattison Machine Works, Rockford, Ill.

BAND SAW FILING MACHINERY
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Co., Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B. Hamilton Ont.

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Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, Que.
Yates Machine Co., P. B. Hamilton, Ont.

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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

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Canadian SKF Company, Toronto, Ont.
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BEAVER BOARD
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Dunlop Tire & Rubber Goods Co., Toronto,

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McKnight & Sons Co., L. G., Gardner, Mass.

BEVEL & MITRE SAWS
Pettingell Machine Co. Amesbury, Mass.

BIRCH
Anderson, Shreiner & Mawson, Ltd., Toronto
Heeney, Percy E. Kitchener, Ont.

BOILER FEED PUMPS
Smart-Turner Machine Co., Hamilton, Ont.

BLOWERS AND BLOW PIPING
Canadian Blower & Forge Co. Kitchener, Ont.
Sturtevant B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

BOOKS
Cosgrave Co., Owassa, Mich.

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
McKnight & Sons Co., L. G., Gardner, Mass.
Nash, J. M. Milwaukee, Wis.
Preston Woodworking Machinery Company Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B. Hamilton, Ont.

BOX SPRINGS
Fischman Spring Co., Kitchener, Ont.

CABINET PLANERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CARVINGS
Klise Mfg. Co., Grand Rapids, Mich.
Walter, John & Sons Limited, Kitchener, Ont.

CARVING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston. Ont.

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Klise Mfg. Co., Grand Rapids, Mich.

CASTERS
Bond Engineering Works, Toronto, Ont.

CASTINGS
Bond Engineering Works, Toronto, Ont.

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Canadian Blower & Forge Co., Kitchener, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

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Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

CHAIR PADS
Fischman Spring Co., Kitchener, Ont.

CHAIR MACHINERY
McKnight & Sons Co., L. G., Gardner, Mass.

CIRCULAR SAWS
Atkins & Co., E. C. Indianapolis, Ind.
Shurly-Dietrich, Galt, Ont

CLAMPS
Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Black Bros. Co., Mendola, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Sons Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company,
Superior Hand Saw and Clamp Co., Grand Rapids, Mich.
Taylor Forbes Co., Guelph, Ont.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

CLAMP CARRIERS
Bilstrom, N. J. Rockford, Ill.
Black Bros. Co., Mendota, Ill.
Taylor Mfg. Co., Poughkeepsie, N.Y.

CLUTCHES
Bond Engineering Works, Toronto, Ont.

COATED ABRASIVES
Herman Behr & Co., Inc., Brooklyn, N.Y.

CONVEYOR EQUIPMENT
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

COUNTER SHAFT FIXTURES
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

COTTON WASTE
Carter, E. T., Toronto, Ont.

COTTONWOOD
South Texas Lumber Co., Houston, Texas

COTTONWOOD PANELS
Rathbone, Geo. Ltd., Toronto, Ont.

COUPLINGS
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

CUT OFF SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Co., of Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Hay Knife Co., Peter, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Shimer Cutter Head Co., Galt, Ont..
Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS
Cowan & Company, Galt, Ont.

DOORS
Pannill Door Co. Ltd., Toronto, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

DOORS (Flush Veneered)
Pannill Door Co. Ltd., Toronto, Ont.
Hay & Co. Ltd., Woodstock, Ont.

DOORS (Fir)
Rathbone, Geo. Ltd., Toronto. Ont.
Eaton & Sons J. R. Orillia, Ont..
Pannill Door Co., Toronto, Ont.

DOOR CARRIERS FOR DRY KILNS
Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

DOWEL MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Co., Preston, Ont.

DOWELS
Canada Wood Specialty Co. Ltd., Orillia, Ont.
Eaton & Sons, J. R. Orillia, Ont.

DRY KILNS
Canadian Blower & Forge Co., Kitchener, Ont.
Cutler Desk Co., Buffalo, N. Y.
Grand Rapids Vapor Kiln, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sidmans, London, Ont.
Standard Dry Kiln Co., Indianapolis, Ind.
Sturtevant, B. F. & Co., Galt, Ont.

DUST COLLECTORS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

DUST SEPARATORS
Canadian Blower & Forge Co., Kitchener, Ont.

EDGERS (Single Saw)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

EDGER SAWS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P.Q.

ELECTRIC GLUE POTS
Sepco Automatic Electric Heaters Toronto, Ont.

ELECTRIC MOTORS AND EQUIPMENT
Lancashire Dynamo & Motor Co., Toronto,
Montreal Electric Co., Montreal ,
Northern Electric Co., Montreal, P. Q.
Sturtevant, B. F. & Co., Galt, Ont.

ELEVATOR EQUIPMENT
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

ENAMELS
Cosmos Chemical Co., Port Hope, Ont.
Denny Hillborn & Rosenbach, Chicago, Ill.
Marietta Paint & Color Co., Marietta, Ohio

END MATCHING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

EXHAUST HEADS
Sturtevant, B. F. & Co., Galt, Ont.

EXHAUST SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

FEED ROLLS
Atkins & Co., E. C. Hamilton, Ont.

FIBRE PRODUCTS
Carter, E. T. Toronto, Ont.
Walter, John & Sons Limited, Kitchener, Ont

FIR DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

FIRE ALARM SYSTEMS
Northern Electric Co., Montreal, Que.

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Such beautiful examples as the majestic organ in the City Auditorium at Denver, Colo., illustrated above, are among the widely varied musical products built in the Wurlitzer plant at Wurlitzer, N. Y.

And the sanding of the different woods that go into their organs and pianos, preparatory to the exquisite finish, is an all-important factor in Wurlitzer perfect craftsmanship.

Carborundum Brand products are used almost exclusively in this great plant. Twenty-four-inch drum paper is on the three drum sanders. Their belts are made from our 2/0 and 0 belt paper and cloth. For their finest finishing work they use 4/0 and 5/0 single-faced Flexbac —because Wurlitzer workmen know that

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Canadian Woodworker" Buyers' Directory—Continued

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Taylor Forbes Co., Guelph, Ont.

FIRE PREVENTION APPARATUS
Bennett & Wright Co., Toronto, Ont.

FIRE EXTINGUISHERS
Pyrene Mfg. Co., Toronto, Ont.

FLOORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FRICTION CLUTCHES
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

GARNET PAPER AND CLOTH
Carborundum Co., Niagara Falls, N. Y.
Herman Behr & Co., Inc., Brooklyn, N.Y.
Oakey & Sons, Limited, John, London, S.E.I. (Wellington Emery & Black Lead Mills).
Canada Glue Co., Brantford, Ont.

GRAINING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GLUE
Canada Glue Co., Brantford, Ont.
Canadian Wood Cement Co., Montreal, Que.
Casein Manufacturing Co., New York City
Dunn Co., of Canada, Thomas W. Montreal
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.
Sanderson Pearcy & Co., Toronto, Ont.

GLUE CLAMPS
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Taylor Mfg. Co., Jas. L. Poughkeepsie, N.Y.

GLUE HEATERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE JOINTERS
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDERS (Cutter)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Simonds Canada Saw Co., Montreal, P.Q.

GRINDERS (Knife)
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS
Carborundum Co., Niagara Falls, N. Y.

GROOVERS
Atkins & Co., E. C. Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

GROOVING HEADS
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Mattison Machine Works, Rochford, Ill.

GUM LUMBER
Hyde Lumber Company, South Bend, Ind.
Kirby Bonner Lumber Co., Houston, Texas
Merceau-Hawkins Tie Co., Huntington, W. Va.
Sondheimer Co., E., Sondheimer, La.
South Texas Lumber Co., Houston, Texas
Toronto Hardwood Lumber Co., Toronto, Ont.

HAND SCREWS
Fay & Egan Co., J. A. Cincinnati. Ohio.
Superior Hand Saw and Clamp Co., Grand Rapids, Mich.

HANGERS
Bond Engineering Works, Toronto, Ont.
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

HANDLE & SPOKE MACHINERY
Fay & Egan Co., J. A. Cincinnati. Ohio.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rochford, Ill.
Nash, J. M., Milwaukee, Wis.

HARDWARE
Larsen & Shaw Ltd., Walkerton, Ont.

HARDWOOD LUMBER
American Plywood Corp., New London, Wis.
Anderson, Shreiner & Mawson, Toronto, Ont.
Atlantic Lumber Company, Toronto, Ont.
Bedna Young Lumber Co., Jackson, Tenn.
Banning, Leland G., Cincinnati, Ohio.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Canadian General Lumber Co., Toronto, Ont.
Des Moines Sawmill Co., Des Moines, Iowa
Hyde Lumber Co., Memphis, Tenn.
Heeney, Percy E. Kitchener, Ont.
Kirby Bonner Lumber Co., Houston, Texas
Kneeland-Bigelow Co., Bay City, Mich.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Louisville Point Lumber Co., Louisville, Ky.
Long-Bell Lumber Co., Kansas City, Mo.
McDonagh Lumber Co., Toronto, Ont.
Luehrman Hardwood Lbr. Co., St. Louis, Mo.
Mercereau-Hawkins Tie Co., Huntington, W. Va
Mississippi Hardwood Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Oliver Lumber Co., Toronto, Ont.
Otis Mfg. Co., New Orleans, La.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Ritter Lumber Co., W. M. Columbus, Ohio.
Sondheimer Co., E., Sondheimer, La.
Stack Lumber Co., Escanaba, Mich.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson Hardwood Co., J. V., Memphis, Tenn.
Stimson & Co., J. V., Owensboro, Ky.
Terry-Nicholson-Cates Ltd., Toronto, Ont.
Toronto Hardwood Lumber Co., Toronto, Ont.
Wood Mosaic Co., Louisville, Ky.
Willey Co., C. L. Chicago, Ill.
Yellow Poplar Lumber Co., Coal Grove, Ohio.

HARDWOOD LUMBER (Kiln Dried)
Rathbone, Geo. Ltd., Toronto, Ont.

HARDWOOD FLOORING
Eaton & Sons J. R. Orillia, Ont.

HEATING SYSTEMS
Canadian Blower & Forge Co., Kitchener, Ont.
Taylor Forbes Co., Guelph, Ont.
Toronto Blower Co., Toronto, Ont.

HOISTING EQUIPMENT
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

JOINTERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Hay Knife Co., Peter, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shimer Cutter Head Co., of Can. Ltd., Galt.
Simonds Canada Saw Co., Montreal, P.Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNOBS
Waddell Mfg Co., Grand Rapids, Mich.

LACQUERS
Cosmos Chemical Co., Port Hope, Ont.

LATHES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sanducky, Ohio.
Mattison Machine Works, Rochford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

LEGS
Klise Manufacturing Co., Grand Rapids, Mich.

MAHOGANY
Otis Mfg. Co., New Orleans, La.
Toronto Hardwood Lumber Co., Toronto, Ont.

MACHINE KNIVES
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P.Q.
Yates Machine Co., P. B., Hamilton, Ont.

METHYLATED SPIRITS
Canadian Industrial Alcohol Co., Montreal

MAGNOLIA
South Texas Lumber Co., Houston, Texas

MILL PIPING
Toronto Blower Co., Toronto, Ont.

MITRE SAWS
Atkins & Co., E. C. Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati. Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.

MONOGRAM FANS
Sturtevant, B. F. & Co., Galt, Ont.

MOTORS
Lancashire Dynamo & Motor Co., Toronto,
Northern Electric Co., Montreal, Que.
Sturtevant, B. F. & Co., Galt, Ont.

MOTOR PULLEYS
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

MULTIPLE BOXING MACHINES
Fay & Egan Co., J. A. Cincinnati. Ohio.
Nash, J. M., Milwaukee, Wis.

NAILING MACHINES
Yates Machine Co., P. B., Hamilton, Ont.

OAK FLOORING
Rathbone, Geo. Ltd., Toronto, Ont.

PAINT
Marietta Paint & Color Co., Marietta, Ohio.
Sanderson Pearcy & Co., Toronto, Ont.

PAINT DRYERS
Sanderson Pearcy & Co., Toronto, Ont.

PAINT SPRAYING EQUIPMENT
DeVilbiss Mfg. Co., Toledo, Ohio

PANELS
Hay & Co., Woodstock, Ont.
Pannill Door Co. Ltd., Toronto, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Rathbone, Geo. Ltd., Toronto, Ont.

PATTERN SHOP MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rochford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PATTERN PINE
Rathbone, Geo. Ltd., Toronto, Ont.

PLANERS
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

The Hoosier Self-Feed Rip Saw

is now made in eight styles

You will find one of these styles especially designed for your work.

No 1 the well known Standard, rips 6" thick, 17" wide; resaws to 6", adapted to single, gang or bevel ripping; the feed will pull six saws through 1" stock.

No. 2 is the No. 1 machine built with one stationary and one movable saw, which is adjustable while running to the full width of the collar space 8½".

No. 3 is especially designed for short gang ripping and will rip as short as 6½".

No. 4 is the No. 1 but built with a wider frame and has 14" collar space where the No. 1 has 8½" collar space.

No. 5 same as No. 2 and has movable saw, which travels the full width of the 14" collar space.

No. 6 is the same as No. 4 but built with an extension bracket at outer end of mandrel and will rip 24" wide.

No. 7 is the same as No. 1, except that it is built with a third or intermediate feed roll and is especially designed for gang ripping.

No. 8 is the same as No. 4, except that it is built with a third or intermediate feed roll and is especially designed for gang ripping.

The reliability and efficiency of Hoosier Rip Saws are known to woodworkers everywhere. They are made in the best possible manner.

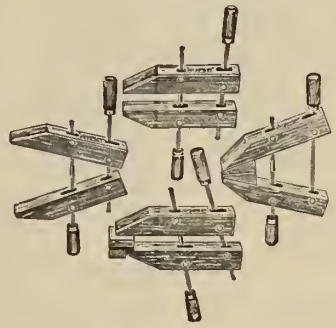
For further particulars and price, address

THE SINKER-DAVIS COMPANY

Indianapolis, Indiana

The "JORGENSEN" Steel Spindle Hand Clamp

10 sizes Adjustable 10 sizes Rigid Jaws



The truth is the "JORGENSEN" is not constructed down to a price but up to a standard—If you need hand screws, why not get the best, and save money, look for the name "JORGENSEN."

"Pony" Cabinet Clamp

For lightness combined with strength this clamp has no equal. All parts are selected from the best materials obtainable and we have spared no effort to make the "Pony" the finest thing of its kind on the market. Made in sizes to open 18 in. to 72 in.

Manufactured only by the

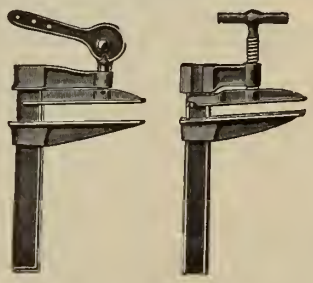
Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

For Sale By

Aikenhead Hardware Limited .....Toronto
Lewis Bros., Limited .....Montreal

Colt's Clamps for the Woodworker



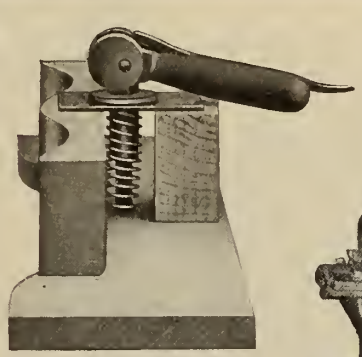
Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

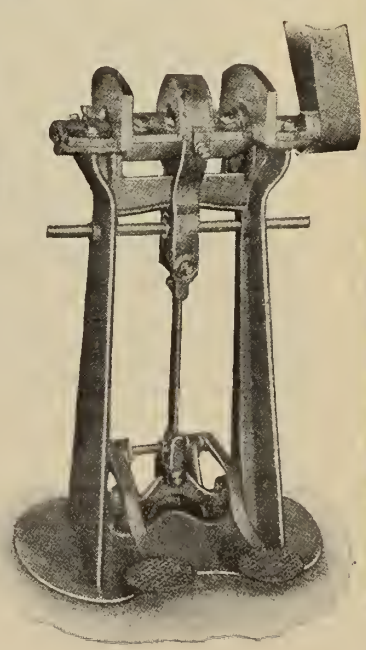
For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St. BATAVIA, N. Y.



Pettingell Stock Clamps for holding stock on forms or jigs when milling or cutting irregular shapes of stock on Dressers — Shapers or Moulding Machines.



Irregular Dresser or Shaper

This machine is designed for dressing all odd or irregular stock to shape. Especially suitable for box pattern work. Necessary in every mill where body stock is turned out.

Woodworking Machines
No. 19 Small Saw Tenoner.
No. 21 Regular Bevel and Mitre Saw.
No. 23 8½-inch Irregular Dresser.
Woodworking machines equipped.
No. 20 Large Saw Tenoner.
No. 22 Large Bevel and Mitre Saw.
No. 24 6-in. Irregular Dresser Stock clamps.
with direct motor or belt drive.

Write for catalogue

PETTINGELL MACHINE COMPANY

AMESBURY - MASS.

"Canadian Woodworker" Buyers' Directory—Continued

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
General Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Toronto Blower Co., Toronto, Ont.
Williams Machinery Co., A. R. Toronto, Ont. Preston, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

PLYWOOD
American Plywood Corp., New London, Wis.
Hay & Co. Ltd., Woodstock, Ont.
Pembroke Plywood Co., Pembroke, Ont.
Wisconsin Veneer Co., Rhinelander, Wis.

PERIOD MOULDINGS
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.

POWER APPARATUS
Northern Electric Co., Montreal, Que.

POWER & LIGHT PLANTS
Fischman Spring Co., Kitchener, Ont.

POWER TRANSMISSION MACHINERY
Bond Engineering Works, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PRESSES (Veneer)
Bond Engineering Works, Toronto, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin, Wm. R. Toronto, Ont.

PULLEYS
Canadian SKF Company, Toronto, Ont.
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.

PUMPS—Condensation and Return
Canadian Blower & Forge Co., Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

RATTANS
Carter, E. T., Toronto, Ont.

REEDS
Carter, E. T., Toronto, Ont.

REED MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

RESAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RETORTS
Perfection Wood Steaming Retort Co.,

REVERSIBLE PLANING MILL FANS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

RIM AND FELLOE MACHINERY
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES
Klise Manufacturing Co., Grand Rapids, Mich.
Waddell Mfg. Co., Grand Rapids, Mich.
Walter & Sons, John, Ltd., Kitchener, Ont.

RUBBING MACHINES
DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.

SAFETY DEVICES
Cowan & Company, Galt, Ont.

SANDERS
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Klotz Machine Co., Sandusky, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SANDPAPER
Behr & Co.. Herman, Brooklyn, N. Y.
Canada Glue Co., Brantford, Ont.
Carborundum Co., Niagara Falls, N.Y.
Sanderson Pearcy & Co., Toronto, Ont.

SASH DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

SASH, DOOR & BLIND MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R. Toronto, Ont.
Yates Machine Co.. P. B., Hamilton, Ont.

SATINWOOD
Willey Co., C. L., Chicago, Ill.

SAWS
Atkins & Co., E. C., Hamilton, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW FILING EQUIPMENT
Taylor Forbes Co., Guelph, Ont.
Wordwell Mfg. Co., Cleveland, Ohio.

SAW SHARPENERS
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW SWAGES
Atkins & Co., E. C., Hamilton, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.

SAW TABLES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

SAW TENONERS
Pettingell Machine Co., Amesbury, Mass.

SCRAPING MACHINES
Canada Machinery Corporation, Galt, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

SCREW DRIVING MACHINERY
McKnight & Son Co., L. G., Gardner, Mass.

SCROLL SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Shurly-Dietrich, Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY
General Machinery Co., Toronto, Ont.
Cowan & Company, Galt, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

SHAFTING
Dodge Mfg. Co., of Canada Ltd., Toronto, Ont.
Bond Engineering Works, Toronto, Ont.

SHAPERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS
Canadian Blower & Forge Co.. Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

SHELLAC
Marietta Paint & Color Co., Marietta, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

SINGLE SPINDLE BORING MACHINES
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.

SLOW SPEED PLANING MILL EXHAUSTERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

SOFTWOODS
Big Bear Lumber Co., Toronto, Ont.
Canadian General Lumber Co., Toronto, Ont.
Rathbone, Geo., Limited, Toronto, Ont.
Heeney, Percy E. Kitchener, Ont.
Luehrman Hardwood Lumber Co. Chas. F., St. Louis, Mo.
Terry-Nicholson-Cates Ltd., Toronto, Ont.

SPRINGS
Ideal Fence & Spring Co., Windsor Ont.

SPRING MATTRESSES
Fischman Spring Co., Kitchener, Ont.

SPRING CONSTRUCTION
Fischman Spring Co., Kitchener, Ont.

SPROCKETS
Dodge Mfg. Co., of Canada, Ltd., Toronto, Ont.

SPRUCE DIMENSION
Rathbone, Geo. Ltd., Toronto, Ont.

STAVE SAWS
Atkins & Co., E. C., Hamilton, Ont.

STEAM ENGINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

STEAM & OIL SEPARATORS AND REFINERS
Smart-Turner Machine Co., Hamilton, Ont.

STEEL BALLS
Canadian SKF Co., Toronto, Ont.

STEEL PLATE PLANING MILL EXHAUST
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.
Toronto Blower Co., Toronto, Ont.

STEEL PRESSURE BLOWERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

SURFACERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS
Atkins & Co., E. C., Hamilton, Ont.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Shurly-Dietrich, Galt, Ont.
Simonds Canada Saw Co., Montreal, P. Q.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE RIMS
Bruce Woodworkers Limited, Chesley, Ont.

TABLE SLIDES
Bruce Woodworkers Limited, Chesley, Ont.
Watertown Table Slide Co., Watertown, Wis.

TEMPERATURE REGULATORS
Canadian Powers Regulators Co., Toronto, Ont.

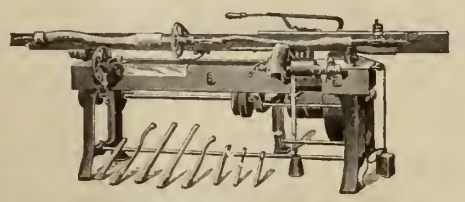
TENONING MACHINES
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
McKnight & Son Co., L. G., Gardner, Mass.
Pettingell Machine Co., Amesbury, Mass.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machincry Co., A. R. Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TOPS
Hay & Co. Ltd., Woodstock, Ont.

TRIMMERS
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Klotz Machine Co's
Handle Machinery

Used Wherever Handles Are Made



42-Inch Handle Lathe

Lathes for turning Ax, Adz, Hammer, Hatchet Pick Sledge Handles, etc., and for turning other irregular articles. Bolting, Blocking, Shaping and Cut-off Saw Machines, Handle Knobbers, End Shapers, Polishers and Throaters.

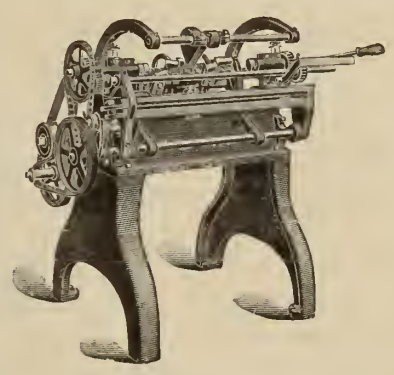
We also make Wine Maker's Machinery, Shafting, Pulleys, Hangers, etc.

MANUFACTURED BY

Klotz Machine Co., Sandusky, O., U. S. A.

Write for descriptive circulars and prices.

HANDLE MACHINERY



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GREATEST PRODUCTION

at

LOWEST COST USE

"OBER"

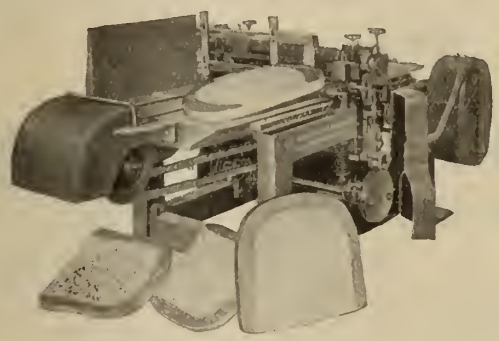
TURNING LATHES, RIPSAWS, SANDERS, CHUCKING MACHINES, etc.

We make machines for turning Axe, Pick, Sledge Hammer, Hatchet, Fork, Rake, Broom, Chisel, File, Knife handles, etc.

Write for free catalogue No. 31.

The Ober Mfg. Co.

Chagrin Falls, O., U.S.A.



McKnight No. 1E

CONTINUOUS AUTOMATIC SADDLE SEAT MACHINE

Machine is arranged for saddling or scooping seats of any desired size or shape. Eliminates hand scraping and considerable sanding. Machine cuts six, eight, or ten seats per minute —depending upon material used.

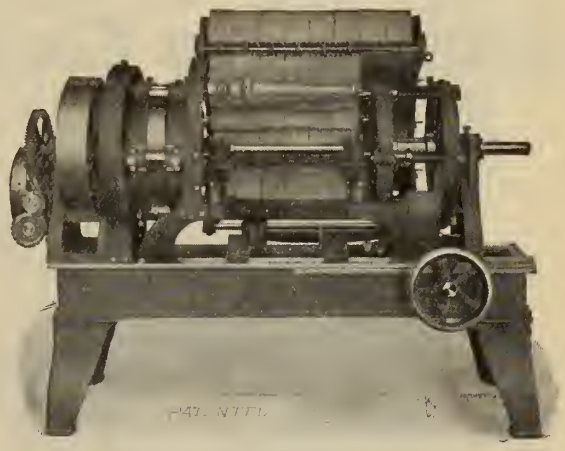
Let us tell you more about it.

L. G. McKnight & Son Co.

CHAIR MAKING MACHINERY

GARDNER, MASS., U.S.A

THE ADVANTAGE



is all with the furniture manufacturer who has a Nash Sander.

His furniture turnings are better sanded and at considerably less expense than those sanded by any other method.

Ask for my free trial plan.

J. M. NASH, Milwaukee, Wis.

"Canadian Woodworker" Buyers' Directory—Continued

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National Dry Kiln Co., Indianapolis, Ind.

TURBINES
Sturtevant, B. F. & Co., Galt, Ont.

TURBO UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

TURNED WOOD GOODS
Canada Wood Specialty Co., Orillia, Ont.
Klise Manufacturing Co., Grand Rapids, Mich.

TURPENTINE
Carter, E. T., Toronto, Ont.
Sanderson Pearcy & Co., Toronto, Ont.

TWIST WORK
Klise Manufacturing Co., Grand Rapids, Mich.

TWISTING AND FLUTING MACHINES
Shawver Co., Springfield, Ohio

UNDERGRATE BLOWERS
Sturtevant, B. F. & Co., Galt, Ont.

UNIT HEATERS
Canadian Blower & Forge Co., Kitchener, Ont.
Sturtevant, B. F. & Co., Galt, Ont.

VACUUM PUMPS
Canadian Blower & Forge Co., Kitchener, Ont.
Smart-Turner Machine Co., Hamilton, Ont.

VARNISH
Marietta Paint & Color Co., Marietta, Ohio
Sanderson Percy & Co., Toronto, Ont.

VARNISH DRYERS
Nicholls Co., A. S., New York, N. Y.

VARNISH SPRAYERS
DeVilbiss Mfg. Co., Toledo, Ohio.

VENEERS
Acme Veneer & Lumber Co., Cincinnati, O.
American Plywood Corp., New London, Wis.
Clark Veneer Co., Walter, Grand Rapids, Mich.
Hartzell, Geo. W., Piqua, Ohio.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Mohawk Veneer Co., Warren, Pa.
Nickey Bros., Memphis, Tenn.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Pembroke Plywood Co., Pembroke, Ont.
Stimson Veneer & Lumber Co., Memphis, Tenn.
Veneer Manufacturers Co., Chicago, Ill.
The Williamson Veneer Company, Mills—Baltimore, Md. Sales Branches, New York, N. Y., Chicago, Ill., Jamestown, N. Y., High Point, N. C.
Wisconsin Veneer Co., Rhinelander, Wis.
Willey Co., C. L., Chicago, Ill.
Wood Mosaic Co., Louisville, Ky.

VENEER DRYERS
Nichols Company, A. S. New York, N.Y.

VENEER SAWS
Atkins & Co., E. C., Hamilton, Ont.
Shurly-Dietrich, Galt, Ont.

VENTILATING APPARATUS
Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

VENEER JOINTERS
Preston Woodworking Machinery Company, Preston, Ont.

VENEER MACHINERY
Preston Woodworking Machinery Company, Preston, Ont.

VENEER PRESSES (Hand and Power)
Black Bros. Co., Mendota, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin, William R. Ltd.
Preston Woodworking Machinery Company, Preston, Ont.

VISES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WALNUT LUMBER
Des Moines Sawmill Co., Des Moines, Iowa.
Hartzell, Geo. W. Piqua, O.
Kirby Bonner Lumber Co., Houston, Texas
Toronto Hardwood Lumber Co., Toronto, Ont.

WASTE
Carter, E. T., Toronto, Ont.

WOODWORKING MACHINERY
General Machinery Co., Toronto, Ont.
Ober Mfg. Co., Chagrin Falls, Ohio.
Pettingell Machine Co., Amesbury, Mass.

WOOD STEAM RETORTS
Perfection Wood Steaming Retort Co., Parkersburg, W. .Va
Shawver Co., Springfield, Ohio

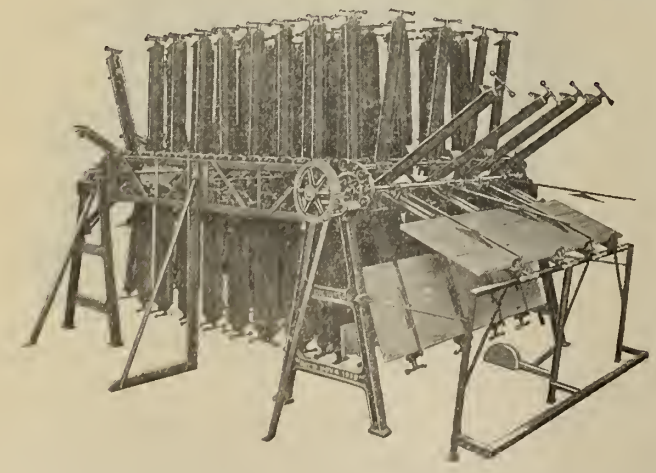
WOOD TURNING MACHINERY
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Mattison Machine Works, Rockford, Ill.
Ober Mfg. Co., Chagrin Falls, Ohio.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES
Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD LATHES
Ober Mfg. Co., Chagrin Falls, Ohio.

The Taylor Clamp Saves its Cost the First Year

and continues to save it each year following



HALF THE LABOR

It is always safe to figure that a Taylor Clamp Carrier will do your gluing in at least half the time required by hand clamps. In many cases it is doing it in much less than this.

LESS FLOOR SPACE

The Taylor Carrier requires less floor space than any other on the market, saving in some instances almost half the space occupied by another carrier.

GREATER CAPACITY

Because of its economy of floor space the Taylor is regularly built with more leaves than any other. It also has larger capacity per leaf for short work because one clamp can be used per unit.

NO POWER

The machine is supplied with Hyatt Roller Bearings and works easily by hand.

Any size to fit your needs—8 and 12 section wheel type. 16, 20, 30 and 40 section chain type, 4, 5 or 6 clamps per section for stock up to 42 inches wide.

Representatives—A. R. Williams Machinery Co., Toronto, Canada

James L. Taylor Mfg. Co., Poughkeepsie, N. Y.

December Specials

1⅜ Fir Doors 3 Panel

107	2 - 8 x 6 - 8	$4.50 each
78	2 - 6 x 6 - 8	
21	2 - 4 x 6 - 8	
6	2 - 2 x 6 - 8	
10	2 - 0 x 6 - 8	
22	2 - 6 x 6 - 6	
4	2 - 4 x 6 - 6	
6	2 - 2 x 6 - 6	

1⅜ Fir Doors 2 Panel

1	2 - 10 x 6 - 10	
105	2 - 8 x 6 - 8	
88	2 - 6 x 6 - 8	
8	2 - 4 x 6 - 8	
26	2 - 2 x 6 - 8	$4.75 each
11	2 - 0 x 6 - 8	
1	2 - 6 x 6 - 6	
19	2 - 4 x 6 - 6	
15	2 - 2 x 6 - 6	
12	2 - 0 x 6 - 6	

1⅜ Fir Doors 1 Panel

129	2 - 8 x 6 - 8	
116	2 - 6 x 6 - 8	
30	2 - 4 x 6 - 8	
29	2 - 2 x 6 - 8	
19	2 - 0 x 6 - 8	$5.00 each
111	2 - 6 x 6 - 6	
13	2 - 4 x 6 - 6	
23	2 - 2 x 6 - 6	

⅜" Panels, Fir, G 2 S

781	25 x 68	.14c. special
593	25 x 62	
223	30 x 60	
234	24 x 60	
194	30 x 72	
218	24 x 72	

¼" Fir Panels, G I S

473	30 x 72	.10c.

¼" Lamatco Panels G 1 S

186	42 x 66	.10c.
22	24 x 66	

⅛" Lamatco Panels G 1 S

165	42 x 66	.07½c.
84	24 x 66	

⅜" Whitewood G 2 S 5 Ply

134	⅜ x 25 x 62
163	⅜ x 25 x 68

⅜" Chestnut G 2 S 5 Ply

85	⅜ x 25 x 68
2	⅜ x 30 x 60
133	⅜ x 25 x 62

⅜" Basswood, G 2 S 5 Ply

12 ⅜ x 25 x 62

⅜" 5 Ply Birch G 2 S

43 pcs. 25 x 68
92 pcs. 25 x 62

⅜ 5 Ply ¼ Cut W. Oak G 2 S

12 pcs. 25 x 62
69 pcs. 25 x 68
109 pcs. 30 x 72 G 1 S

⅜" 5 Ply Plain Red Oak G 2 S

125 prs ⅜ x 25 x 62
32 pcs. ⅜ x 25 x 68
9 pcs. ⅜ x 30 x 72
10 pcs. ⅜ x 24 x 60
44 pcs. ⅜ x 30 x 60

⅜" 5 Ply Selected Red Gum G 2 S

35 pcs. ⅜ x 25 x 62
62 pcs. ⅜ x 25 x 68
100 pcs. ⅜ x 30 x 72 G 1 S

Our stock of Clear Pine and Kiln-dried hardwoods is very complete. Let us quote you.

GEORGE RATHBONE LTD.

Northcote Ave, Toronto

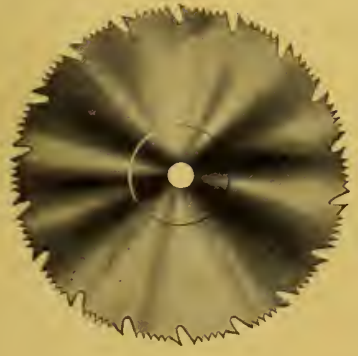
ATKINS

STERLING QUALITY

SAWS and KNIVES

ECONOMIZE

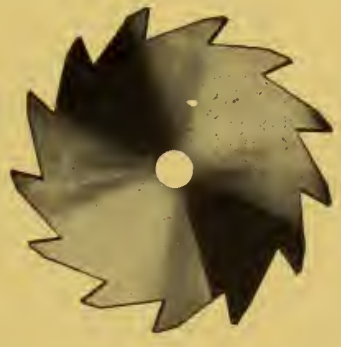
ARE your saws and knives wasting your lumber? If so, why not turn that waste into a profit by installing



Atkins Sterling Quality Saws

and Machine Knives

Some of the largest woodworking mills in the country are using Atkins Saws exclusively, because they increase production, stop waste and make a name for themselves wherever they go.



Write to-day for our Knife Booklet "C.W." and Pattern Template Paper.

E.C. ATKINS & CO.

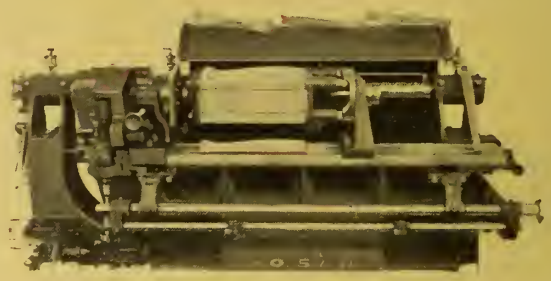
Makers of Sterling Saws

Factory—HAMILTON, Ont. **Vancouver Branch—109 Powell Street**

Shaping Half-French Chair Legs Automatically

FOR the low-cost production of round, square and octagonal shaped chair legs, as well as those of Half-French and Colonial design, the versatile Mattison Lathe is unequaled.

It is not a machine for big production on one or two patterns only. In fact, it is because it has been developed to handle small lots of turnings in endless design, economically, that has made it such a practical machine for the small manufacturer as well as the largest.



This picture illustrates the automatic centering mechanism on the Multiple Center Chair Leg Turning Attachment. Operator places blanks between centers which grip the stock and present it to the cutterhead. Legs are automatically released after two sides have been shaped.

A new bulletin describing the 570 has just been issued. Send for it and get full evidence of the superiority of THE STANDARD MACHINE TURNER.

MATTISON
MACHINE WORKS
Rockford, Illinois, U.S.A.